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ABSTRACT

Enacted as part of the Telecommunications Act of 1996, the E-rate provides discounts to public and private schools, libraries, and consortia on telecommunications services, Internet access, and internal networking. Discounts vary based on the poverty level of the community. The first section of this report presents findings from surveys returned by 500 public and private schools, school districts, libraries and library consortia, mixed consortia, and state education agencies. Survey results indicate that the E-rate program is increasing involvement in and opportunities for learning for all Americans; is fostering greater parental involvement in children's learning; is spurring demand for and deployment of the Internet; and is fostering partnerships among diverse community institutions. E-rate discounts are leveraging significant new investments in technology in schools and libraries. Respondents expressed frustration with the administration of the program and the application process in particular, which many found confusing and burdensome. Concerns were also expressed about whether the funding is adequate to meet demand and if not, whether some communities will be shut out of the program altogether. The second section presents in-depth profiles of seven schools and libraries in seven states, and describes the impact that the E-rate program is having in these communities. The last section presents the stories of 39 primarily-rural schools and libraries in 29 states, which are representative of the respondents as a whole. (TD)

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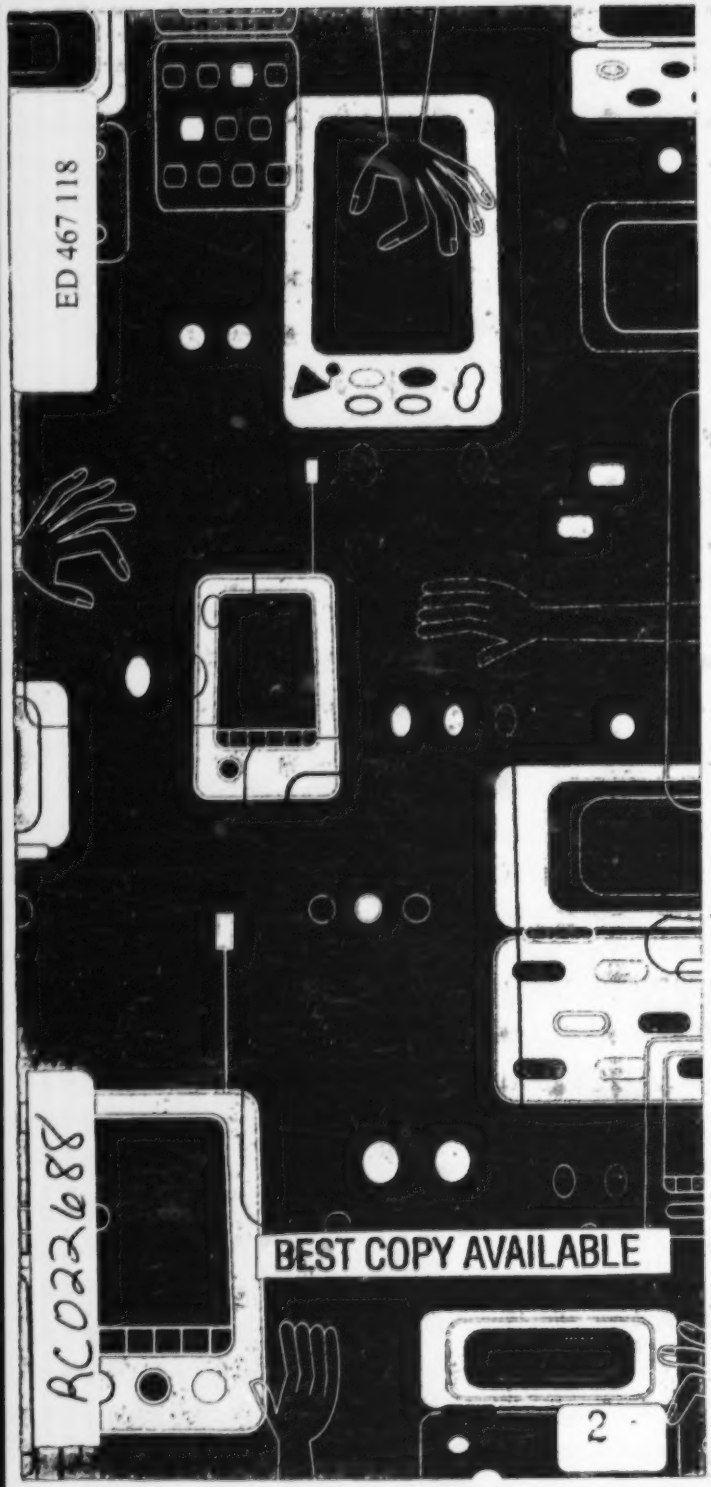

E-Rate

Keeping the Promise to Connect Kids and Communities to the Future

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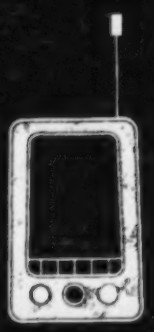

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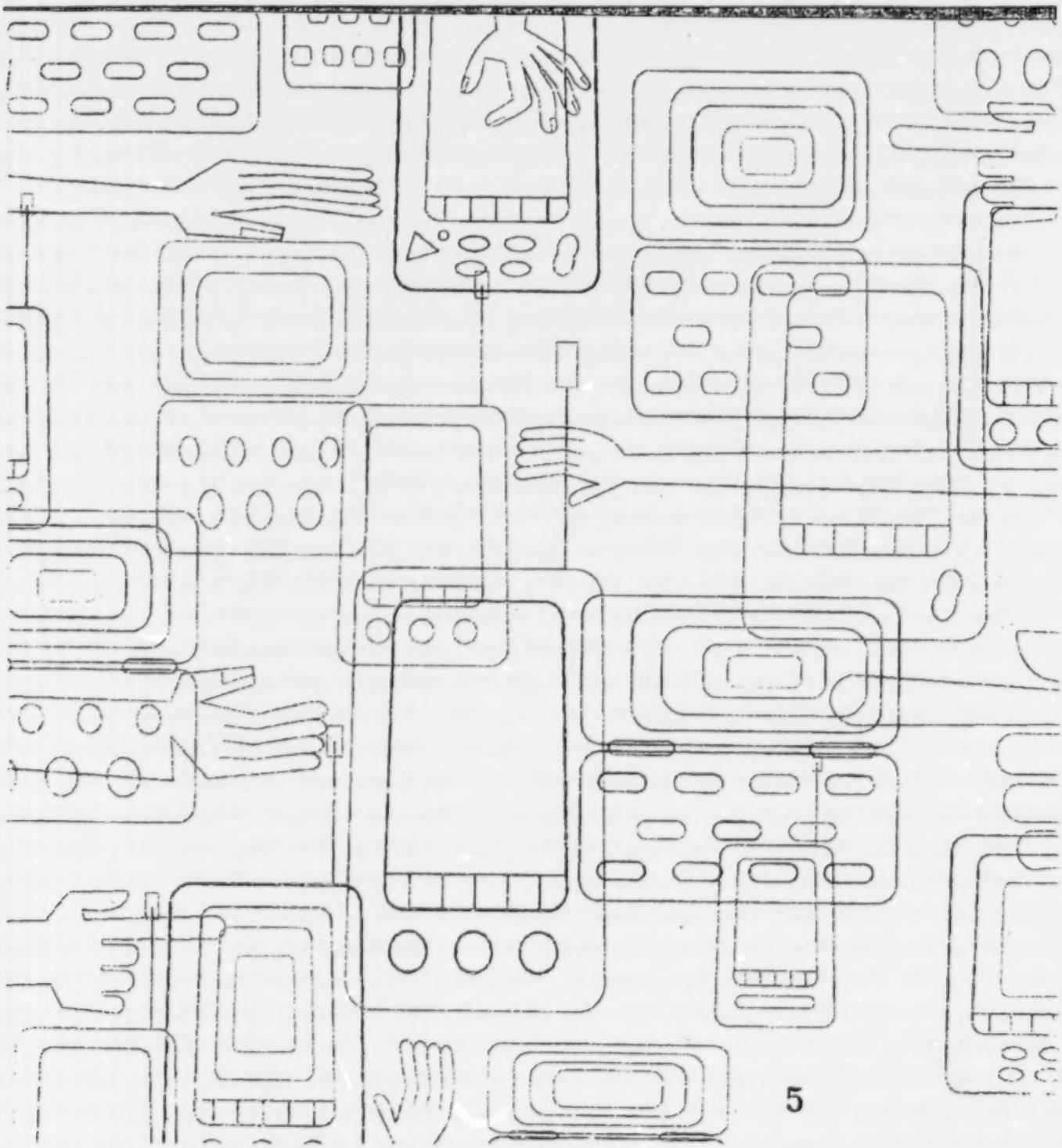

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INTRODUCTION

In the last decade, the information revolution has transformed almost every aspect of American life. But until Congress enacted the E-rate in 1996, few schools and libraries had the resources to keep up. The E-rate, now in its third year, provides discounts on telecommunications services, Internet access and internal connections to libraries and schools. **In the first two years, $3.66 billion in discounts have brought the Internet and new information technologies to tens of thousands of schools and libraries.**

These numbers—while powerful standing alone—do not tell the full story of the E-rate. In the end, the value of the E-rate is not about numbers; it is about people and the impact access to new technology is having on their lives. This report, the result of an extensive survey of E-rate participants undertaken by the Education and Library Networks Coalition (EdLiNC), looks behind the numbers to tell the stories of the children and the communities who have been enriched and empowered by the E-rate.

The promise of the E-rate is straightforward: to assure that all Americans, regardless of income or geography, can participate in and benefit from the new information society. This report concludes that the promise of the E-rate to connect kids and communities has been kept.

ABOUT THE E-RATE

The E-rate was enacted as part of the Telecommunications Act of 1996—a law intended to create a competitive telecommunications marketplace for consumers. As part of the Universal Service Program (which makes telephone service available and affordable to almost all Americans), the E-rate provides discounts to public and private schools, libraries and consortia on telecommunications services, Internet access and internal networking. Discounts range from 20 to 90 percent based on the poverty level in the local community, and schools and libraries are required to pay the undiscounted portion of the bill themselves. The Federal Communications Commission funds the program up to $2.25 billion dollars annually, contingent upon demand.

In the program's first two years, tens of thousands of public and private schools and thousands of public libraries in this country have received over $3.66 billion in discounts on connectivity and telecommunications services. **This spring, the FCC announced that the third year of the program would be fully funded at $2.25 billion.**

ABOUT THE REPORT

This report is based on a survey that was conducted in spring 2000. The survey instrument was sent by e-mail to each of the 15,500 schools, libraries, and consortia with valid e-mail addresses that filed applications in Year Two of the E-rate program.[1] Nearly 500 of the 15,500 surveys were returned (a response rate of 3 percent), which included responses from public and private schools, school districts, libraries and library consortia, mixed consortia and state education agencies. This report is based on those 500 responses.

The report itself consists of several sections: the first section sets out the principal findings of the survey; the second section presents in-depth profiles of seven schools and libraries, and describes the impact that the E-rate program is having in these communities; and the last section presents the stories of 39 schools and libraries that are representative of the respondents as a whole.[2]

[1] Copies of the survey instrument are available on the EdLinc website, www.edlinc.org

[2] All of the respondents who are highlighted in the report have been interviewed to verify their responses.

KEY FINDINGS

Now in its third year, the E-rate discount program is playing a central role in bridging the digital divide by bringing new technologies and the power of the Internet to America's schools and libraries. This is the conclusion of extensive survey research of E-rate funding recipients by the Education and Library Networks Coalition (EdLiNC). In turn, schools and libraries are bringing innovative new learning models to children and lifelong learners, as well as a host of unexpected synergies to entire communities. This report provides analysis of nearly 500 surveys on the impact of the program in communities across America. The findings include:

The E-rate program is increasing involvement in and opportunities for learning for all Americans. The E-rate is encouraging teachers to integrate new technologies into learning and is sparking a remarkable growth in distance education. It is transforming libraries into centers for digital learning and communications.

The E-rate program is fostering greater parental involvement in children's learning. Parents are becoming more involved in their children's learning by using Internet tools (including e-mail and school websites) to monitor their children's progress and to communicate more regularly with teachers and school administrators. Many parents are following their children's example and learning to use the computer and the Internet for the first time. Many schools are opening their doors at night to teach technology skills to parents and others in the community.

The E-rate program is spurring demand for and deployment of the Internet. Because of E-rate funding, many schools and libraries in underserved areas are leading the way in their communities in gaining access to the Internet and obtaining broadband (high-speed) connections. These new community Internet access points are, in turn, spurring demand for Internet access in the rest of the community.

E-rate discounts are leveraging significant new investments in technology in schools and libraries. The E-rate is dramatically expanding the ability of schools and libraries to meet and even exceed their technology goals. Savings realized from the discounts are being reinvested into other technology needs. Moreover, the E-rate is serving as a catalyst for states and private foundations to increase their technology assistance programs to schools and libraries.

The E-rate program is fostering partnerships among diverse community institutions. E-rate participants are using their new connectivity to build creative new community partnerships with businesses, community colleges, museums and senior citizen centers. Local public libraries are filling gaps for schools without libraries, and students are training senior citizens in the use of the Internet.

SURVEY RESULTS

The results of the survey are clear. Overwhelmingly, survey respondents report that E-rate funding is bridging the digital divide for children and communities, and creating new learning strategies and new life opportunities for everyone.

Finding 1 **The E-rate program is increasing involvement in and opportunities for learning for all Americans.** The most important finding of this report is that the E-rate has increased opportunities for learning in schools and libraries across America. Survey respondents report that teachers are using their new Internet access to lead children on "virtual field trips" to zoos, museums, libraries, national parks and even foreign countries. Students are actively involved in dialogues either through e-mail or videoconferencing, with scientists and other experts, as well as fellow students from around the world. Schools are joining together to participate in collaborative online projects, such as the annual tracking of monarch butterflies, and students are becoming much more interested in their own education. For example, in the Holly Springs Schools in Holly Springs, Mississippi, a rural, high-poverty school district, second grade students are becoming more intellectually engaged and curious learners, finding out about foreign countries on the Internet, corresponding with pen pals and dramatically improving their vocabulary. As Karon Tarver, Technology Director for the East Chambers Independent School District in Winnie, Texas commented, "The E-rate has helped this farming community student body to see beyond the rice fields. Students are more interested in technology and participating in a global community."

The E-rate has also been central in bringing distance learning—via live video casting and web-based classes—to students, particularly in rural and underserved communities. Many school districts have joined together to create distance learning consortia, offering classes via two-way interactive video, classes, which individually they would be unable to offer. For the first time, many students have access to a wide variety of language, mathematics and advanced placement classes and some are even taking college courses. For example, a high school in Norton in the mountains of rural southwest Virginia is connected to other high schools, a local community college and a university in order to offer students classes that would otherwise be unavailable. Similarly, Cathedral High School, a parochial school in inner-city Boston, is participating in a cooperative consortium of schools providing distance learning courses to one another. These programs make efficient use of teachers' talents and expand opportunities for students.

Libraries have also seen patrons flock to the vast new information sources made possible by the Internet. Library patrons are using the Internet to expand their opportunities and improve their lives, staying in touch with friends and family, reading non-local newspapers, looking for jobs, tracking the stock market, following state and federal legislation, and, of course, doing traditional research. According Amy Richards, Director of the Barrington Public Library in New Hampshire, "[t]he library is now an area where people come to e-mail friends and family, do business transactions over the Net and where students do research for classes. People who do not have computers use ours and learn to use them through courses we offer, and many older people have utilized the staff as teachers to learn more about the new technologies. One older gentleman used our computers to contact old World War II buddies he hadn't spoken to in years!" The high demand for Internet access in the library has sparked increased demand for other library services and facilities as well. According to James Casey, Library Director in Oak Lawn, Illinois, "[T]he library is *busier* because of the Internet. People who use the Internet in their homes and at work are more information active... The Internet is a stimulus to library use and not a replacement for the library."

Finding 2 **The E-rate program is fostering greater parental involvement in children's learning.** Parents are becoming more involved in their children's learning as a result of the E-rate. As schools get wired and teachers become more tech-savvy, more and more resources from lesson plans to interactive instructional videos are placed online. Teachers are getting e-mail accounts and are keeping in closer touch with parents. Parents are able to more closely monitor their children's progress, and teachers can ensure that students receive the support necessary for learning at home. For example, teachers in the Kingsburg Elementary School District in rural Kingsburg, California, regularly update websites with information about class assignments and activities so parents can monitor their children's learning. Similarly, the Stony Brook School, a private boarding school on Long Island, New York, has found that the e-mail system has dramatically enhanced communications between teachers and parents, some of whom are hundreds or thousands of miles away. Many other districts and schools are also facilitating communication between teachers and parents via e-mail, actively encouraging both teachers and parents to use e-mail for communication.

What's more, as children become technology literate, parents are clamoring to catch up. Many schools are now offering classes for parents and other community members, and survey respondents report that parents are beginning to see investment in computers and Internet access at home as an investment in their children's future. According to Sharon Bowman, a school library media specialist in Thompsonville, Illinois, "[A]s students become excited about the technology they are using at school, many parents acquire computers and Internet connections for home use." In fact, the school district in Arp, Texas, (a rural district with only 860 students) has been able to refurbish and donate 75 computers for use in the homes of local residents. Libraries also report an increase in parents and children coming to the library together to do homework and take computer classes.

Finding 3 **The E-rate program is spurring demand for and deployment of the Internet in communities across America.** For many communities, particularly those in rural and inner-city areas, Internet access has either been unavailable, severely limited by slow dial-up telephone connections or prohibitively expensive. One important finding of this survey is the impact of the E-rate on broadband deployment. Dozens of respondents reported that their local school or library was the first institution in their community to acquire broadband Internet connectivity. In the small town of Bakersfield in rural Missouri, the Bakersfield R-4 School District was the first to get broadband connectivity and, because of the high ongoing cost of broadband services, the schools are the only institutions in the community able to afford it. Similarly, in the rural town of Wallowa, nestled in the mountains of eastern Oregon, the Wallowa School District 12 is also the only institution able to afford broadband Internet access. In some instances, the school or library is also the only public access point for the Internet for the entire community. In Lohrville, Iowa, a rural community of 300, the local library is the only source for public Internet access, and its computers are busy all day long.

Rural schools and libraries in particular have taken steps to share the benefits of that connectivity with others, including the local community. For example, the Lawrence County schools in Louisa, Kentucky, are allowing members of the community to learn on the school's computers after hours. Many survey respondents noted that their "early adoption" of broadband Internet access has encouraged other organizations and businesses to follow suit. Finally, residential deployment of broadband services—such as cable modems and digital subscriber lines (DSL)—has been spurred by the public availability of broadband technology in schools or libraries. Students, parents and community members who have experience with high-speed access at school or the local library, are beginning to ask for similar quality service at home.

Finding 4 **The E-rate program is leveraging significant new investments in technology in schools and libraries.** The sponsors of the E-rate legislation envisioned the program as a catalyst that would encourage participants to increase their own investment in technology, and that would stimulate support from state and local government and private foundations. The survey results strongly demonstrate these goals are being met. Importantly, the savings realized from E-rate discounts are not being diverted to other budget areas. Most respondents report that those savings are being reinvested in technology—professional development, computers, software, other technology services and equipment—which are not eligible for E-rate discounts. At the same time, the E-rate is bringing additional technology funding to participating institutions, as public and private grantmakers attracted to the E-rate's extraordinary multiplier effect, dedicate new funds to technology.

For example, in the suburban community of Southfield, Michigan, the local school district has used its savings from E-rate discounts to purchase additional software and computers, and to conduct training sessions for teachers and staff. At the same time, the overall technology budget in the school has increased as the benefits of technology have become more apparent to school boards and administrators. Schools and libraries across the country have reported similar outcomes. As Theresa Kucsma, Director of Support Services in the Southwest Licking Local School District in Etna, Ohio noted, "[The E-rate] gives me a lot of leverage in asking for expanded services when I go to our superintendent and board. A 40 percent discount is hard to argue against."

In addition, respondents report that states and private grantmakers alike are encouraging schools and libraries to apply for the E-rate, since participation in the E-rate by schools and libraries multiplies the power of other funding programs several fold. Many states have set up competitive grant programs for schools and libraries. In some states, these programs are quite extensive. For example, in Texas, the Telecommunications Infrastructure Fund, more

commonly known as TIF, has given schools throughout Texas a huge boost in moving into the 21st century. Schools in Texas are not only able to expand their own buying power by applying for discounts on services they will purchase out of their local budgets, but they are also able to improve the buying power of funds received through TIF by applying for E-rate discounts. Several other states have similar programs, and some are even requiring that a school be receiving E-rate discounts in order to benefit from the state's funding program. Other states have also developed similar initiatives, such as Pennsylvania's Link-to-Learn project, designed to leverage the E-rate and other federal programs.[3] Private schools have also found the E-rate to be an effective catalyst for additional funding. For example, the St. Francis of Assisi School in Astoria, New York, has been able to raise additional funding for projects thanks in part to its E-rate-funded high-speed Internet connection.

Private grantmakers are also increasing their technology giving to schools and libraries. In turn, these institutions are maximizing their buying power by combining these grants with the E-rate discounts. According to Karen Gillespie, Library Director in rural Grayson County, Kentucky, "[D]ue to the E-rate discount and... the generous donation from the Gates Library Foundation, we have five public access computers, which are busy every hour of every day. The public library is the only source for access to the Internet in this area."

Other schools and libraries have also succeeded in leveraging E-rate discounts to attract a broad variety of funding sources. For example, the Buffalo & Erie County Public Library in Buffalo, New York, leveraged almost $700,000 in E-rate funds to acquire $950,000 in private grants from several sources, $300,000 in combined state and federal grants and $4.1 million in local funding to update the technology in the local libraries. All 52 libraries in the county are now able to offer fast, reliable Internet access on modern computers, and the bookmobile is able to offer high-speed wireless access to patrons throughout the county.

[3] For more information on the Link to Learn initiative, see http://www.l2l.org.

For many, the E-rate discounts and the financial support they attract has made it possible for schools and libraries to move forward with their technology plans for the first time. According to Jim White, technology director for the Kenai Peninsula Borough School District in Soldotna, Alaska, "[W]e have tried four different big technology initiatives since 1995. The first three failed. The costs for building a networked system *and* purchasing desktop computers were just too expensive. E-rate gave us the ability to build our networking infrastructure without having to compete with 'classroom teaching' in the budgeting process."

Finding 5 The E-rate program is fostering new partnerships in the community.

Schools and libraries have a long history of cooperation, collaboration and partnership with institutions in their local communities. The E-rate has expanded many of those partnerships, and built many new ones as well. Among our respondents, approximately half are engaged in an E-rate-facilitated partnership with another school, library, museum, institution of higher education or other local community group.

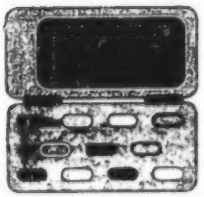
Some of these partnerships are limited—such as a partnership between a rural school and a nearby college for distance education classes—while others are more far-reaching. Several libraries responding to the survey indicated they are partnering with local schools to provide library services to schools that have had their own school libraries cut in recent years. In several cases, schools and libraries are partnering by sharing an Internet connection as well as library resources. According to Jackie Gotz, Library Director in East Troy, Wisconsin, "[The E-rate] added a sense that the community was working together and sharing resources. The barriers have started to come down." Schools and libraries are also partnering with local museums, community institutions, and even, in some cases, local government and business. For example, in Glasgow, Kentucky, high school students learn web design, and create web pages for the local chamber of commerce and businesses. The financial proceeds are used as a fundraiser for the school.[4]

[4] More information about this partnership is available at http://www.glasgowbarren.com.

CONCLUSION

There are, to be sure, ongoing concerns about the program. Respondents continue to express frustration with the administration of the program and the application process in particular, which many still find confusing and burdensome. More importantly, respondents continue to worry about whether the funding for the program is adequate to meet demand and if not, whether some communities will be shut out of the program altogether. Nevertheless, the E-rate stories that follow illustrate the E-rate has been a driving force for bringing schools, libraries and their communities into the information age. In less than three years, the survey documents a powerful sea change in teaching and learning, and a leveling of the playing field for underserved and rural communities. The E-rate is not only encouraging technology literacy and opening up new opportunities for all Americans, it is encouraging communities to invest in technology and attracting new sources of financial support to that end. Moreover, the E-rate has been an incentive for schools and libraries to seek high-speed connections and for companies to build out broadband infrastructure to traditionally underserved communities.

COMMUNITY PROFILES



Gila County Library District

Globe, Arizona

For some residents of Gila County, Arizona, phone service is a luxury. So the idea of connecting to the Internet seemed out of reach—until the E-rate program made it possible for the Gila County Library District to build the technology infrastructure to connect to the Internet and cover Internet-related costs.

The Gila County Library District has used its 70–90 percent discounts valued at over $53,000 to pay for wiring, telephone lines and Internet access for the libraries and two schools included in its jurisdiction. The communities in the library district are primarily rural and poor, and because the poverty level is so high—almost 50 percent—most people do not have computers or phones at home. The libraries in the district provide Internet access to community members and even to some city governments. For example, because the city offices of Hayden, Arizona, does not have Internet access, the Mayor and financial director use the library to e-mail and research, according to Yodona Pennell, system specialist for the Gila County Library District.

The library district has found creative ways to maximize the use of its Internet access. "In Tonto Basin, Arizona, we put a phone in the library and then dug a trench from the library to the [technology] lab at the school so the school could have Internet access without needing a new phone line," says Pennell. "The school only has 67 students in kindergarten through eighth grade. E-rate made it possible for these 67 students in a very rural community to have access to a wealth of information resources."

Members of the community have also found creative ways to use the Internet. "The Internet provides so much information to our community," says Pennell. "Some people look up information on medication that they are taking, others look for a particular book. One woman from Young, Arizona, where a trip into town requires a two-hour drive on a dirt road, planned her entire wedding over the Internet." Many used the library's Internet access to vote in the first-ever online primary in February 2000.

> Many people do not even have phones in their homes. Once we got up and running, a whole new world was opened up.

"Internet access is a valuable resource in the community of San Carlos," Pennell explains. "Many people do not even have phones in their homes. Once we got up and running, a whole new world was opened up. It is the one thing that brings community members into the libraries, the one thing that keeps them at the library and the one thing they wish they could spend more time on." ○

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Paradise Unified School District

Paradise and Magalia, California

The Paradise Unified School District serves Paradise and Magalia, located in the foothills of California's Sierra Nevada Mountains. This isolated and rural community is home to many retirees, and has a significant low-income population. The children who live here, according to one local teacher, need to be shown at every chance the value of school. The E-rate program has allowed the teachers and children to move beyond the limitations of the community to improve teaching and learning.

With E-rate discounts that range between 60 percent and 81 percent, Paradise's participation in the program has translated into $300,000 of networking and infrastructure-building money. The school district has built network infrastructure, networked computers and installed T-1 lines. "Since we are in the mountains and distances are great, the T-1 lines have been extremely important," says Midge Kenyon, technology coordinator for Paradise Unified School District.

The benefits of E-rate have been profound in this isolated community. Teachers now develop units of study that go beyond the resources of the classroom. For example, Beth Paterson, a fourth-grade teacher at Paradise Elementary, used the Internet to present a multidisciplinary unit on the annual Iditarod dog-sled race in Alaska. Paterson's unit allowed her students to choose a dog in the race, learn the rules, map the course of the race and answer mathematics-based word problems. Students also did writing and art projects based on the Iditarod race and the culture of the Alaskan people. "The Internet allowed my students to go to a place and learn about something they could never have done before," Paterson says. For her students and the other students in the district, Paterson is thrilled to have the resources of the Internet at her disposal. "The Internet erases boundaries of age and class. Everyone can access it in an equal way. In Paradise, this is especially important because of the limitations some of these children face," comments Paterson.

Thanks to savings from the E-rate, students at the Pine Ridge Learning Center have educational technology at their fingertips.

The E-rate has also made possible an innovative approach to distance learning. One of Paterson's students is the child of a Chinese movie actress. The family was going to China for about 10 weeks so the mother could complete work on a film. Paterson worked with the family to devise a curriculum to allow the child to keep up with her studies and to provide students within her class the opportunity to learn about Chinese culture.

"When I typed up the daily overheads for the class, I e-mailed them to the student," Paterson says. "I also e-mailed her spelling lists and social studies projects. And when I bookmarked sites for students in the class, I could put hotlinks in the e-mail to the student in China so she could do the same work we were doing." What was supposed to be an eight-to-ten week visit to China turned into a six-month stay. "The Internet made it possible for this student to complete her studies from thousands of miles away," Paterson says. "Additionally, because of the Internet, the students back in California were able to e-mail their classmate and learn firsthand about the Chinese culture and the vast cultural differences." This experiment in distance learning showed Paterson that "distances aren't what they appear."

Parents in this isolated community were initially somewhat skeptical about the Internet. "We were a little concerned about the Internet. But we took the time to go to the school library with our children and find out what it is all about," says Cerise Roberts, mother of a fourth and fifth grader at Pines Elementary. "Because our sons showed us all of the great educational information and programs that are out there, we feel comfortable with the Internet and are investigating computers for home purchase," Roberts comments. "The technology use and research skills being taught at school are critical to preparing students to keep up with the pace of society and with the educational demands that they need to meet in higher education," she adds.

The technology made possible by the E-rate has been critical to this school district. "We have very limited resources," says Kenyon, the technology coordinator. "The availability of Internet resources has made it possible to concentrate the limited budget we do have on the areas most required by the curriculum. We can then use electronic resources to meet other needs." The district formed a partnership with the Butte County Public Library for a satellite facility and became a member of the Library of California, which includes 5,000 libraries in the state that provide a wide range of resources to students and the entire community.

The technology use and research skills being taught at school are critical to preparing students to keep up with the pace of society and with the educational demands that they need to meet in higher education.

The large retiree community is also learning about the Internet firsthand during night classes the school district began offering last fall. According to Kenyon, classes filled immediately and the waiting list is lengthy. The school district also created a local public library, which is housed at one of the elementary/middle schools and has computers for community access to the Internet and an adult collection of books. Paradise Unified School District is working with local colleges for classes of interest to the local community to be taught on-site at one of the schools.

The E-rate program's value has been felt throughout the community. "Everyone has been involved with the planning activities," states Kenyon. "The incentive to apply for the E-rate discounts has motivated all members to concentrate on the technology. The parents of our students are grateful their children have access to these resources that create equal opportunities with other children," Kenyon adds. ○

Thompsonville Grade & High School

Thompsonville, Illinois

Thompsonville, Illinois is a small town of 600 residents with a bank, a post office, a feed store, two convenience stores and a restaurant. Field trips are few and far between because of the long distances between Thompsonville and major educational sites. Thanks to the E-rate, the 198 grade school students and 100 high school students now travel to places far beyond the confines of Thompsonville—via the Internet.

Thompsonville Grade & High School, with a discount level ranging from 60–80 percent, has used the over $13,000 of E-rate discounts to install a T-1 line and to upgrade its server with more storage capacity, more memory and a faster processor. "Although our school had received grant funding that allowed us to install a computer network, our connection was so slow that most teachers who tried to use the network for instructional purposes became frustrated," says Sharon Bowman, media specialist at Thompsonville. "They would spend an entire class period and often not achieve anything. Now, with our T-1 line, all students can be put on one site at a time and teachers can take a virtual field trip with their classes."

Virtual field trips are especially important in this corner of Illinois where trips to the closest big city, St. Louis, Missouri, take over two hours and the state's capital is out of reach for a one-day field trip. "Many teachers use the online tours of the White House, the Governor's Mansion, and the Abraham Lincoln sites so their students can experience these historic places," Bowman says.

The addition of a T-1 line has enabled teachers in rural Thompsonville, Illinois to change the way they use Internet resources, resulting in younger children more engaged in learning.

Carol Kern, a first-grade teacher, uses Internet resources to bring one of her literature units to life. Her first-graders read a story about the Mary Rose, a ship that was shipwrecked in 1545. Her students can then visit the museum where the ship's artifacts are housed and communicate directly with the museum. "The T-1 line has made such a dramatic difference in the way we can use Internet resources," says Kern, "because the faster connection allows us to keep the children, especially the younger ones, interested."

Marilyn Morris, a teacher at Thompsonville and mother of three students there, believes that the exposure to technology and skills her children are gaining are critical to their future success. "It is vital that children not be afraid of technology. My children have

been afforded the opportunity to gain proficiency with technology. They taught me a lot of what I know," Morris explains. "Connection to the Internet lets our children enjoy the benefits of living in a small community and remain connected to the world," she adds.

Thompsonville's T-1 connectivity will allow it to offer distance learning to its students and the community beginning in fall 2000. "We are a small school so we do not have a full-time foreign language teacher. Now, we provide foreign language classes to our students through satellite, which does not allow them to ask questions of their teachers or to benefit from other students' questions. We are planning to provide interactive distance learning in foreign language and some advanced classes," Bowman says.

Adults in the community will be able to take classes from Rend Lake College at the school once the distance learning center is up and running. Now, adults come to the school to learn about the Internet two nights a week. Bowman provides tutorial help. "Two farmers come in consistently to search for farm equipment and check grain prices," says Bowman. Bowman also works with community members to help them gain skills for new jobs in this former coal-mining town.

The E-rate has enabled students in Thompsonville to reap the rewards of being connected to the rest of the world, while still enjoying the benefits of living in a small town.

In Thompsonville, we have always had a battle to make our children see that there is a world outside our local area. Technology is letting us win that battle.

"The technology made possible through E-rate has made students excited about learning in new and different ways," comments Bowman. "The excitement spreads from the students to the parents. As a result, many parents have purchased computers and Internet access for their homes. Parents have even come in and spoken with teachers about specific software to aid in their children's specific learning needs.

"In Thompsonville, we have always had a battle to make our children see that there is a world outside our local area. Technology is letting us win that battle," Bowman adds. ○

Essex County Vocational Schools

West Orange, New Jersey

Essex County Vocational Schools serve over 2,000 ninth through twelfth graders from one of the poorest urban areas in the United States. 94 percent of the students, who are primarily African American and Latino, are from economically disadvantaged homes. One key mission of the vocational schools, which provide academics and athletics as well as vocational training, is to ensure that its students leave with career possibilities. The E-rate program has made sure that Essex County Vocational can prepare its students for the technology-rich workplace.

With discounts between 86 and 89 percent, valued at over $1.3 million over two years, Essex County Vocational Schools has been able to establish local area networks, or LANs, within each of its schools and a wide area network, or WAN, across the district. E-rate funds also support the high-speed T-1 access to the Internet. All other telecommunications costs have been discounted, allowing the district to reallocate funds towards other important education technology projects, including purchasing more workstations for its students and providing staff development opportunities for its teachers.

The development of the networks has had profound effects on the way teachers teach and students learn, according to Jerry Sackin, director of technology for Essex County Vocational Schools. "The networks have allowed students and teachers to access networked and Internet resources and to share and communicate between and among each other," he says. "Access to the networks also encouraged us to purchase new software

Students at Essex County Vocational Schools use the Internet to research questions raised in class.

that is helping teachers develop and implement curriculum and collaborate on projects in classes across the district. We have also created a new program that every incoming ninth grader takes in the uses of technology as a tool that can be used across the entire curriculum," Sackin adds. Teachers must also take a course in "Core Technology," designed to give them the understanding and skills to utilize the available technology as both a professional and instructional tool, according to Sackin.

Vic Fiallo, a biology and general science teacher, has fully integrated technology into his curriculum. "Students incorporate Internet resources in their scientific experiments. First, a student will identify a problem or a question. Then she will do research on the Internet to find out if she can answer the question. If the question cannot be answered, she creates a hypothesis

[The] economy is being transformed by information technology. If our students don't have a basis of understanding information technology and its relevance to their life, they won't be able to step out and function in higher education or the workplace.

based on the research she did and designs an experiment to test the hypothesis. She then collects the data, uses a spreadsheet to analyze the data and publishes her conclusions through a Power Point presentation," Fiallo says.

Fiallo wants to make even greater use of the network and Internet access available to him and his students. "I would like to engage my students in a discussion about the environment and then work cooperatively with students from other schools to collect data, analyze it, and draw conclusions," explains Fiallo. "Technology makes so many things possible."

E-rate funds have also helped Essex County Vocational Schools tap into new sources of technology funding. "We applied for a special grant to allow us to open a new lab to make Internet access available to adults in the community in the afternoons and evenings. Without the infrastructure that E-rate allowed us to build, we would not be able to host such a facility," says Sackin.

Both Sackin and Fiallo believe technology is of critical importance to Essex County Vocational's student body. "As the county vocational school for this community, it is vital that our students have this access to technology, both as an educational tool and to prepare to be a successful participant in the technology-rich workplace in which they will work. The socioeconomic status of our community is such that we would not have been able to do most of these major technology projects, or establish the extensive infrastructure that is just about complete, without E-rate funds," Sackin states. Fiallo echoes Sackin's thoughts and acknowledges that the "economy is being transformed by information technology. If our students don't have a basis of understanding information technology and its relevance to their life, they won't be able to step out and function in higher education or the workplace." ○

Essex Vocational students all take courses in technology where they learn not only how to use technology as part of learning, but also how to apply their technology skills to careers.

The Stony Brook School

Stony Brook, New York

Stony Brook is no ordinary grades 7–12 school, as over half of its students are boarders, some from as far away as Korea; Internet access is not just a key component of the teaching and learning process, but a vital tool for communicating with parents.

While Stony Brook is currently moving forward with plans to fully implement its technology plan (thanks to a 40 percent E-rate discount valued at $48,000), the school has already purchased a new server and installed a T-1 line, making Internet connections quicker and seamless. The school plans to install two Internet connections in each classroom and establish additional computer labs at the school as a result of E-rate. "One of the first questions prospective students ask us is 'what technology do you have?' We need to be able to provide them with the technology they will need to help make the transition to college easier. E-rate is allowing us to do that," Eddy adds.

Students and teachers are benefiting from the E-rate. "In-class computer instruction was not possible before we were able to install the T-1 line," says Eddy. "Now teachers prepare presentations in their offices and then use them in the classroom. Students see the real value of the Internet as a source of current information and with tremendous research potential," notes Eddy. According to Eddy, one English class is reading *Cry, The Beloved Country* by Alan Paton, a novel about South Africa, and students in the class are e-mailing students in South Africa to gain insight into that culture.

Martha Pavao, a Latin teacher at Stony Brook, has found that designing her classroom presentations using a computer and the Internet has been efficient and productive. An added bonus, according to Pavao, is that "students pay attention in a way I have never seen before." Pavao says that she does not use the blackboard much anymore. "I open up Microsoft Word and type in different fonts and colors. The students help me design the presentations."

The Internet has also allowed Pavao to work with a Latin teacher in Kentucky, who teaches her class over the satellite television. "To help her students, [the teacher in Kentucky] developed teaching tools on the Internet. Since we use the same textbook, she has allowed us to access her Internet resources. This has been extremely helpful for my students," explains Pavao.

The Internet has also provided Pavao's students with additional resources. "There are so many resources for my advanced placement Latin class students to take advantage of on the Internet. For example, *The Aeneid* is online and every word in it is linked to commentary. Pre-web, we simply wouldn't have been able to access secondary resources like this," says Pavao. "Computers and the Internet have changed the way that students can learn. It opens up new avenues for them. It allows me to create interactive presentations that excite them about learning," Pavao adds.

Keeping parents involved and informed is a priority at Stony Brook. "Communication is so vital in the boarding school setting," Eddy adds. "We use e-mail to communicate with parents of our international students as well as other boarding student parents. We also use e-mail to keep our local parents informed of campus happenings. In addition, we field questions from our parents and teachers regarding the college application process. The Internet has made this communication easier and less expensive. The money we have been able to save on phone service as a result of E-rate has enabled the school to upgrade computers and pay our share of the E-fund expenditures. We have also been able to hire a part-time consultant to train our staff," says Eddy. ○

Supernet Consortium

Whitehouse, Texas

In largely rural eastern Texas, students are often bussed 30 miles each way to their nearest school. Now, the great distances between schools are being bridged. Thanks to the support of the E-rate, 15 rural districts have formed the Supernet Consortium to bridge the distance between the schools and with parents.

Debi Crawford, employed by the University of Texas Health Center at Tyler, serves as the project director for the Supernet Consortium. E-rate discounts and savings have allowed the consortium to buy better, longer lasting networking equipment, connect more classrooms and provide important training to teachers. The district's technology hub is at the University of Texas Health Center, which also serves as a hub to eight colleges. Not only have the schools been better equipped but, "because of the E-rate discounts, we have been able to network the 15 districts together." Crawford says. "This has allowed us to share services and expertise and to provide our rural students access and opportunities no one of us would have ever been able to provide our students. Next year we will offer computer classes from a local junior college through distance learning centers. We are also working on getting masters classes to the teachers."

The technology made possible through the $163,000 in E-rate discounts has transformed the consortium of 15 districts into a community, giving teachers access to their peers and parents access to teachers. According to Lisa Schoonover, mother of a fifth-grader at Arp Elementary School in eastern Texas, "Teachers have e-mail, which allows for instant contact with teachers. It has been great for communication."

Students in Supernet Consortium Schools use both traditional measurements and technology tools to solve math puzzles.

Both parents and teachers praise the technology made possible through the E-rate program. Janice Moore is a fifth-grade language arts teacher at Kissam Intermediate School in Chapel Hill, Texas. Her social studies class has been using PowerPoint to develop presentations on certain states. "The students have collected information on the states and inserted pictures taken with a digital camera to create PowerPoint presentations that they will present at the fifth grade program at the PTA meeting," Moore says. Moore has been able to leverage the technology infrastructure provided by the E-rate discounts at her school into another computer for her classroom. Achieve.com, a private online service for teachers and parents, is providing her with a computer with the understanding that she will work with the

Crawford touts the Consortium as "an E-rate success story. Without [the] E-rate we could not have done everything that we have done."

company to develop communication between teachers, parents, and students. "My goal is to expose my students, many of whom come from lower socioeconomic backgrounds, to technology. The children are going to need these skills for their life and their work," Moore explains.

Faith Williams believes that technology has taken her children to places they would not otherwise have the opportunity to go. "My son, a third grader, is studying caves. He and his classmates went on the Internet and 'toured' caves that are far from where we live. When he actually visits a cave in Austin, Texas, he will know what to expect," Williams says. Williams also credits the Accelerated Reader testing software for encouraging her children to become better readers. "The children read books and then have to answer questions on the computer before moving to the next level. Because more computers are now available for testing, the children can be tested more often and therefore progress more rapidly," Williams says.

The Consortium has leveraged its E-rate discounts to obtain additional funds. "Because we had our network up and running due to [the] E-rate, we received a Technology in Education (TIE) grant to provide professional development to our teachers so they can better use technology in their classrooms to benefit their students," Crawford says. In four months alone, teachers spent 7,200 hours in training outside of the classroom. Additionally, the schools can leverage some of the funds they were awarded through the Technology Infrastructure Fund (TIF) through the E-rate, making those technology dollars even more valuable.

Because Internet access in east Texas is expensive and slow, few members of the community had access to the Internet prior to the E-rate. Now, many of the districts in the consortium—who were the first in their communities to have high-speed access—are sharing their faster access with the larger community.

Crawford touts the Consortium as "an E-rate success story. Without [the] E-rate we could not have done everything that we have done."

St. Francis Xavier School

Moundsville, West Virginia

The 135 students in grades K–8 at St. Francis Xavier School in Moundsville, West Virginia, are the local community's hope for the future. Moundsville, a community in northern West Virginia, has repeatedly seen once-vital businesses and industries close down. By teaching its students how to use technology, St. Francis hopes to provide its students with the skills to succeed in higher education and the technology-rich workplace.

"Before the E-rate program, we had a hodgepodge of computer systems," says Catherine Frame, principal of St. Francis. "Nothing was the same throughout the school and we were not networked. After we took advantage of the 40 percent discounts from the E-rate, we wired the school for Internet access and each classroom was networked to our computer lab," Frame adds. "We would not have been able to afford what we have been able to do without the E-rate. Now that we have gotten the initial investment, we can do things incrementally to improve what we have." In addition to providing the money to wire the school and connect it to the Internet, the E-rate discounts, valued at about $2,600, freed up money to purchase curriculum software and to provide teacher training to use it.

Students at St. Francis Xavier use computers to research and design their own presentations on historical events—in this case, the American Revolution.

E-rate dollars also helped attract additional funding. "We received a grant to purchase a scanner, digital camera and web design software to create a website and publish a school newspaper," Frame comments. "Because of the E-rate initiative, our diocese has been responsive to the technology needs of all diocesan schools. The diocese is working on providing grant money and hiring a technology coordinator," Frame adds.

Linda Hanlin, a computer, social studies and geography teacher at St. Francis, believes Internet resources help students learn how to solve problems. "It is my goal to help my students become good problem-solvers through the use of the computer," Hanlin says

E-rate dollars also helped attract additional funding. "We received a grant to purchase a scanner, digital camera and web design software to create a website and publish a school newspaper," Frame comments.

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The great thing about children is they like technology. Once we pique their interest, they take it and run with it.

"[t]he search engines we use generate a lot of information. My students learn how to sort through that information and determine what is really valuable information.

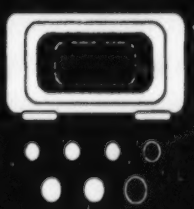
Students at St. Francis have put the resources of the Internet to good use. "Our eighth graders communicate with a Peace Corps volunteer in Niger, West Africa," says Frame. "They accessed the Peace Corps website to learn more about the Peace Corps and the specific area where their volunteer serves." Hanlin's fifth-grade geography students also used the Internet when they were getting ready for a cultural fair. "The students researched the customs, foods and culture of various European countries in order to make the fair a success," Hanlin says.

Joan Estep says that access to computers and the Internet has engaged her sixth-grade son, a student at St. Francis Xavier, in his schoolwork. "Getting my son to read books is a struggle," says Estep. "But when it comes to the computer, he likes nothing better. He has used the Internet to do presentations to his class on subjects ranging from Joan of Arc to whales. Next year, he will do a project for the social studies fair and he is already asking me if he can get on the Internet to research what topic he might like to do his project on." Her son's enthusiasm has spilled over to the family. The Estep family now has a computer connected to the Internet at their house.

To give parents a firsthand look at how their children are using technology, St. Francis Xavier School is planning classes for parents to learn the software students are using and how to use the Internet. "Our parents have been impressed with what this small school has been able to do for their kids, notes Frame. "Now we want to give them the opportunity to try it out themselves."

"The reason why [the] E-rate is so important is that it provides students at a young age with the opportunity to learn about technology use," observes Frame. "The great thing about children is they like technology. Once we pique their interest, they take it and run with it. If we do not access technology and teach the responsible use of technology to our children, we do them a disservice. They will not be ready for the real world." O

STATE REPORTS



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alaska

Kenai Peninsula Borough School District
Soldotna, Alaska

Discount Level: 58–62%
Discounts in Year One: $293,128
Discounts in Year Two: $738,621
Contact: Jim White, Technology Director, jwhite@kpbsd.k12.ak.us

The Kenai School District spans a 25,000 square mile peninsula in south central Alaska and serves a diverse rural population. Many of the district facilities are so remote they are accessible only by boat or airplane.

The Kenai School District started wiring its vast campus in 1995. The E-rate has enabled the district to upgrade the quality of its external network connections to T-1 lines, and to reinvest savings from the E-rate back into the technology budget, putting formerly unattainable projects within reach. According to the District's Technology Director, "E-rate gave us the ability to build our networking infrastructure without having to compete with 'classroom teaching' in the budgeting process."

Kenai has partnered with Homer Electric Association, the local electric utility, and the local phone company to complete a project begun five years ago, a 70-mile fiber-optic backbone connecting Soldotna and the city of Homer. Seventeen schools are currently connected to this high-speed backbone, with plans to connect additional schools. This district has been able to enter a 10-year discounted contract to pay the ongoing costs for this 45-megabit, high-quality connection because of the E-rate.

Since 1995, Kenai has been trying to achieve a five-to-one student-to-computer ratio, with computers less than five years old, Ethernet connections, printers and software. Before the E-rate, the district had fallen short of this goal, unable to pay for both networking and equipment. With E-rate discounts, the district is finally making significant progress. With E-rate helping to build the network infrastructure, the local borough (county) government recently allocated $1.6 million to be spent on student desktop computers over the next three years.

B.B Comer Memorial Library
Sylacauga, Alabama

Discount Level: 70%
Discounts in Year One: $3,402
Discounts in Year Two: $3,678
Contact: Shirley Spears, Library Director,
sspears@sylacauga.net

B.B. Comer Memorial Library serves a largely rural, blue-collar population plagued by high poverty levels, a 30 percent dropout rate and a 5.7 percent unemployment rate. Talladega County was ranked 53rd of 67 counties for having conditions that place children at risk. Many homes do not have computers and schools and libraries are just beginning to get computers for public use.

The E-rate has helped Comer Library pay for internal connections and its monthly Internet access charges. The E-rate support also attracted additional technology funds to Comer. The Gates Foundation donated computers and the state used Library Services and Technology Act (LSTA) funds to upgrade the online catalog and prepare the database for dissemination via the Internet. The City Utilities Board ran a fiber optic line, furnished a hub, and connected the libraries and schools to a fiber optic ring, the only high-speed connection in town. Now, Comer Library has 10 workstations with high-speed Internet access and may add up to 90 more. Within a few years, the Comer Library has gone from being resource poor to being awarded one of four National Library Service Awards from the Institute of Museum and Library Services.

E-rate is also helping the Sylacauga and Talladega County schools install their telecommunications infrastructure. Students will be able to view Comer Library's online catalogue from school and

anywhere else the can connect to the Internet. In addition, the Alabama legislature provided $3 million to create the Alabama Virtual Library, which makes eight major educational and research databases available from public libraries, public schools and institutions of higher education. Access is also available from home for Alabama residents through the use of special cards issued by libraries throughout the state. The entire program is predicated on public schools and libraries being adequately connected to the Internet, which would not be the case without the E-rate.

Access to the Alabama Virtual Library and the improved quality of Internet connections have radically changed Comer Library's ability to serve its public, from being able to locate books at other libraries to helping a patron get details on his water purification system. Comer Library is now able to communicate with ease and immediacy; patrons' requests can usually be filled within minutes and hours rather than days and weeks. Everyday, the staff of Comer helps patrons find online information on a variety of topics, including employment, continuing education, travel, medicine, news, and government, to list a few.

B.B. Comer Library offers programs to children at risk and their families, and as part of the program, parents learn how to help their children academically by using a computer. The library offers one-on-one instruction in basic computer and Internet skills. The library has also prepared a grant to provide a senior citizen's area where seniors can comfortably learn and use the computers at their own pace using large-print software and ergonomic accessories. With continued E-rate support, Comer Library is looking into distance learning and videoconferencing for the future.

Fountain Hill Schools

Fountain Hill, Arkansas

Discount Level: 75%
Discounts in Year Two: $1,400
Contact: Sherry Harris, Technology Coordinator,
sharris@fhs.sesc.k12.ar.us

Located in the southeast corner of Arkansas, Fountain Hill is a rural farming community with a moderate to low-income base. The population is mostly white, but also includes a sizable African American and Hispanic population as well.

Thanks to the E-rate, the Fountain Hill School District is providing Internet connections and network wiring, cabling and connectivity to almost all classrooms. In addition, the Arkansas Department of Information Services is providing a T-1 line to the district, also discounted through the E-rate. Before the E-rate, none of the classrooms in the district had access to the Internet; now, virtually every classroom in the district is wired for Internet access and connected via the district's broadband connection, the first such connection available in the community.

High-speed Internet connectivity and computers in the classroom opened a gateway that teachers are using to enhance lectures and hands-on learning through graphics, movie clips and other online resources. Teachers are using educational software in many classes, often to supplement traditional teaching methods in basic reading and mathematics courses. The activities initiated with E-rate funds have also sparked new partnerships with several districts in the local area. Together, these districts are installing distance learning labs that will allow them to share hard-to-find teachers in subject areas required by state mandates. Also, the district is collaborating with local colleges to offer dual-credit online courses for high school students.

Parents are excited by the technology, and are purchasing computers for use at home. "Parents have purchased computer technology for the home because of their children using technology in the classroom. Students, excited about learning have encouraged parents to become technologically literate," says Sherry Harris.

San Bernardino School District

San Bernardino, California

Discount Level: 84%
Discounts in Year One: $20,000,000
Discount in Year Two: $13,000,000
Contact: Linda Smith, Director of Technology,
linda_smith@eee.org

The San Bernardino School District (SBSD) serves a large, poor urban community with a high percentage of Hispanic students and families for whom English is not their primary language. The district schools do not have very much money, but the E-rate has helped the district provide quality technology, and all the educational opportunities it brings.

With funding help from E-rate discounts on phone services, SBSD has been able to wire 97 percent of its classrooms for the Internet. This allows whole classes to use the Internet in their daily exercises. Schools throughout the district have also begun using software programs for reading and mathematics.

SBSD boasts an excellent website, which is updated continually, with several schools providing information on academic and athletic events, links to online homework help, student information, teacher resources and other information. This website, in combination with websites posted for individual classes, has given parents increased access to important information about their childrens' education. The school is experiencing more interaction with parents, and teachers are having more contact with students outside of the classroom as a direct result of this increased connectivity.

The Internet has also broadened students' opportunities for learning. Teachers are using the Internet to supplement traditional learning materials and expand the resources available for teaching and learning. For many years, students have taken a trip to tide pools each year to learn about the abundance of marine life that lives along California's coast. Traditionally, students would visit the tide pools, then learn about what they had seen once they returned to school. Now, using the Internet, students extensively research the tide pools before they even leave for the beach. According to teachers, students are more interested in the tide pools and are learning more, thanks to the Internet.

One computer-intensive project of note, among the many taking place at any given moment in the district, is at the Golden Valley middle school. The Golden Valley students make short television shows about current events at their school, like academic, art & sports events, holiday festivities or Career-day activities. The middle school then exchanges these tapes with schools in other regions. The students produce the shows themselves, using computer-based video editing and television production techniques. Eventually, these video newsletters will be posted online in streaming video. The project is a favorite among students and demands the use and refinement of many different skills. But without the help of the E-rate program, the school would not have been able to bring the quality computer access that enables such programs.

The SBSD plans to offer the community use of its facilities after-hours, and to offer classes in computer literacy and other adult education opportunities, especially with ESL adults.

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colorado

Garfield City Public Library System
New Castle, Colorado

Discount Level: 57%
Discounts in Year One: $11,000
Discounts in Year Two: $8,000
Contact: Jacilyn Spuhler, Director, jspuhler@colosys.net

The Garfield City Public Library System serves 2,984 square miles of rural western Colorado, containing a fairly homogeneous population of 40,500. Recently, significant numbers of Latino immigrants have settled in the area. Major industries in the area are tourism, agriculture and ranching.

E-rate funds have enabled the library system to begin connecting its six branches with dedicated high-speed lines. Without E-rate funds, the library system could not afford to install or maintain these connections. One of the six branches is complete, two more are scheduled to be upgraded shortly, and the remaining three are slated for completion within two years. The library system had been unable to develop Internet-related programs for its users because of its dependence on an unreliable and slow dial-up connection. With the upgrade to LAN lines, the library plans to offer computer and Internet literacy classes and to increase its services to the public.

At the first LAN-connected library, demand for Internet access is heavy, with Internet sign-up sheets for an entire week fill within hours of posting. The library is the only publicly accessible, broadband connection in the area, and people come specifically to use the Internet and are clamoring for more access. "One interesting aspect of providing Internet access has been the use many foreign visitors have made of our terminals. Many hikers, backpackers and other tourists take advantage of our 15-minute, web-based e-mail check to 'phone home' to Mom in New Zealand, etc. Living in a scenic part of Colorado, we have found that this service to people passing through is greatly appreciated." Additionally, library system staff are now able to provide patrons online documents, such as government forms or reference materials, which used to take many days to retrieve.

Hartford Schools and Library Consortium
Hartford, Connecticut

Discount Level: 89%
Discounts in Year One: $8,343,536
Discounts in Year Two: $13,437,678
Contact: Bob Richter, Manager of Networking and Telecommunications, brichter@hartfordschools.org

The Hartford Schools and Library Consortium, a partnership of Hartford's public schools and libraries, serves the largest school district in all Connecticut. Hartford is the capital of one of the nation's richest states; yet the city itself ranks among the nation's poorest, with a reduced-price lunch participation of nearly 90 percent and a mostly Hispanic and African American student body.

Centrally located in Hartford and close to information and instructional leaders such as Connecticut State University, Trinity, University of Hartford, University of Connecticut and the University of Connecticut Health Center, the Consortium is committed to connecting every major network in the state, as well as providing wireless or broadband Internet connections to eligible residents of Hartford. The E-rate program has provided the support to install and maintain the complex infrastructure.

Hartford's schools and libraries had virtually no telecommunications infrastructure a short while ago; with the help of E-rate, the Consortium has installed a fiber-optic wide area network infrastructure that will enable the schools and libraries to connect to services, networks and resources, and will provide a platform capable of supporting an array of instructional methods such as net-meetings, videoconferencing and distance learning. With continued E-rate support, the consortium has moved into the second phase of its plan—to increase the speed of, and number of access points to its wide-reaching basic network. This upgrade will include installing a new phone system in every library and school classroom to increase connectivity between telephones and computers. Most of the community uses the consortium's network at the public libraries—one of the only publicly accessible high-speed access points in the area. According to the Consortium's manager of networking and telecommunications, "E-rate has fundamentally changed, for the better, how school systems do business... how teachers teach and how students learn."

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Jefferson County School District

Monticello, Florida

Discount Level: 84%
Discounts in Year One: $545,485
Discounts in Year Two: $346,125
Contact: Linda Hewett, Technology Director, Hewett_L@flrn.edu

The Jefferson County School District serves 1,900 students in rural, north-central Florida. More than 70 percent of the district's students are minorities, and the high poverty level among students has allowed the district to quality for deep discounts through the E-rate program.

Because of the E-rate discounts, the district is providing Internet access to every classroom. Prior to the E-rate, the schools only had a 20-year-old television system that was scarcely functional. Now, the district has Internet access and is wiring classrooms for interactive TV to allow distance learning. According to the district technology director, Linda Hewett, the E-rate "has greatly benefited Jefferson County Schools."

The new connections are expanding opportunities for students. Through the Florida Electronic High School, high school students are participating in a wide variety of courses including advanced placement, college preparatory, mathematics, science, vocational education and foreign languages. Furthermore, in collaboration with the North Florida Community College, the district is also offering online college-level courses.

Teachers are using comprehensive software programs across multiple subject areas and levels to bolster instruction; these programs allow students to learn at their own pace. Teachers are leading students on electronic field trips to destinations all over the world, an experience that helps them overcome the geographical barriers isolating this community. In addition, teachers are now able to pursue in-service training through a state consortium that provides training and resources to teachers online. All district teachers and staff members now have access to e-mail to communicate with each other, and teachers are using the Internet to trade ideas for lesson plans with their peers. E-mail is also connecting parents to their children's education, allowing them to communicate with teachers quickly and easily from work or home.

Beckman High School

Dyersville, Iowa

Discount Level: 40%
Discounts in Year One: $5,152
Discounts in Year Two: $4,243
Contact: Jim Derr, Technology Coordinator,
jderr@beckman.pvt.k12.ia.us

Dyersville, Iowa, is a small rural town of 4,000. E-rate discounts and participation in the Iowa Community Network's video classroom have dramatically expanded the opportunities for this small school of 482 students.

Before the E-rate, Beckman High School's only Internet access was through a slow 56k Internet connection. Now, with the addition of a T-1 high-speed Internet connection, internal networking to take advantage of that connection and computers in every classroom, a world of opportunities has opened up for students and the community. The school is now linked to the state community network, ICN, which is a state-funded distance learning network that extends throughout Iowa. Students are able to take advanced placement classes in subjects such as calculus, and to take college-level classes for credit from Iowa State University and a local community college. Beckman has the only broadband Internet connection and the only connection to the state community network in the local community.

The high school has opened its doors to the local community for adult education classes and classes in basic computer use and the Internet.

Most importantly, students and teachers are engaged in learning. Instead of just reading about research, students have talked—via live videoconferencing—with scientists working in the Galapagos Islands in Ecuador and are learning firsthand about research in the field. Many other courses are now incorporating the Internet and software to enhance the educational experience. Teachers are excited about the possibilities for teaching, and students are enthusiastic about learning.

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Howard-Winneshiek Community School District

Cresco, Iowa

Discount Level: 60-80%
Discounts in Year One: $29,984
Discounts in Year Two: $20,313
Contact: Dave Alcock, Information Services Supervisor, dalcock@howard-winn.k12.ia.us

The Howard-Winneshiek Community School District is located in a rural part of Iowa where there was little or no reasonably priced Internet access prior to the E-rate program.

Before the E-rate, 60 percent of the district's schools were connected to the Internet, but with slow, expensive lines, or single dial up connections. Now, thanks to the E-rate, every classroom in the district has a high-speed Internet connection. The E-rate discounts have allowed the school system to install local area networks with Internet access in two buildings that were not wired previously.

Dave Alcock, the district's Information Services Supervisor, said "[T]he E-rate dollars have allowed teachers and students in our district who are geographically disadvantaged to utilize the Internet for learning activities and instructional resources." Teachers are becoming more involved in integrating technology into the curriculum. Many of the classes in the school now utilize instructional resources such as software programs and use the Internet as a learning tool.

Elementary students in some of the district's classrooms are using the Internet to communicate with education majors at a nearby liberal arts college, sharing ideas about books that the students have read. The interaction led to a collaborative website, featuring favorite books and authors. Elementary teachers are also using the "Journey North" program, tracking and reporting the planting, growth, and blooming of tulips and the annual migration of monarch butterflies. The district is also conducting school-to-work programs for secondary students, including a program in which they learn how to build and maintain websites, then sell their services to businesses, and another program in which they build a student bank which interacts online with the local banks. Through these programs, students are learning how to use the Internet while also learning valuable vocational skills.

School computer labs have been opened to the public to host community education training sessions and to provide area businesses with a training site where they can educate their workforce about computer and Internet use. Although two local businesses also purchased broadband Internet service at approximately the same time as the district, the district's broadband connection is the only broadband connection in the community that's available to the public and accessible to small business employees and owners.

The district will soon launch an instructional management tool that will involve the school, parents, and students in the learning process. Once the initiative is up and running, parents will be able to access grades, homework and class work and will communicate with teachers online.

Rembrandt Public Library

Rembrandt, Iowa

Discount Level: 60%
Discounts in Year Two: $684
Contact: Joleen Anderson, Library Director, remblib@ncn.net

Rembrandt is a tiny town in the northwest corner of Iowa with a population of roughly 200 people. The local industry revolves around agriculture.

The local library's budget is so small that even the $684 in discounts from the E-rate has made a dramatic impact. These E-rate funds have helped Rembrandt Public Library maintain a single terminal with access to the Internet. Prior to the E-rate program, the library could only afford one phone line, which had to be shared for voice and Internet calls. Now the library can afford a dedicated phone line for the Internet terminal, allowing library patrons access to the Internet at any time. The library was the first in the town to provide the public with access to the Internet.

In fact, Internet access has attracted many people to the library for the first time and has opened a new world of information and ideas to town residents. For example, a library patron was able to find a job online in another state. Thanks to the Internet access, many patrons are able to find out about important housing and medical information through the library's terminal. Older patrons also visit the library to learn how to use computers and to access the Internet.

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Idaho

Genesee Joint School District 282
Genesee, Idaho

Discount Level: 50%
Discounts in Year One: $4,370
Discounts in Year Two: $8,634
Contact: Dave Neumann, Superintendent,
dneumann@genesee.uidaho.edu

The Genesee Joint School District serves a rural agricultural community in northwest Idaho. Thanks to the E-rate, the district has been able to make the technology upgrades that would otherwise have been long in coming.

Genesee Joint School District has made technology a priority issue. It has installed Internet and telephone access in every classroom, and has almost achieved a ratio of one computer to every 2.5 students. The district's high-speed connection is the only one of its kind in the community.

As part of a distance learning consortium with area high schools, the district is offering a broad array of classes. Next year, high school students will be able to receive dual-credit for college courses taken using distance learning. Without the E-rate, they would not have had this opportunity since there are no local colleges. Genesee is also working on a partnership with the University of Idaho to study effective implementation of technology in the classroom.

The district is using software for the instruction of reading, language arts and mathematics at the elementary level. The teachers also are using the Internet both in and out of the classroom for research and a wide range of student projects.

The E-rate has dramatically expanded communications with parents and the community. Parents now have ready access to teachers through e-mail. Furthermore, the community has an opportunity to learn about computers and the Internet through district courses offered to the public.

According to the district's superintendent, Dave Neumann, "[The E-rate] is an excellent program, reasonably easy to apply for and helps to leverage other services and products."

St. Joseph's School
Downer's Grove, Illinois

Discount Level: 20%
Discounts in Year Two: $7,105
Contact: John Becker, Technology Coordinator,
j.becker@ameritech.net

St. Joseph's is a K-8 parochial school serving a middle-income suburban community of about 80,000. The school's local cable provider provided St. Joseph's with a free cable modem connection, which, in ordinary use, is roughly equivalent to a T-1 connection. The E-rate helped maximize this donation by supporting the internal wiring of the school. St. Joseph's had an inconsistent mix of software that varied by classroom, but savings from the E-rate program allowed the school to invest in curriculum software, and standardize software throughout the school.

Because of its enhanced Internet connection, St. Joseph's plans to become a member library in the Suburban Library System of DuPage and Cook counties. This would enable St. Joseph's to share library information with the county libraries, greatly simplifying the location and acquisition of materials, while dramatically increasing the resources of the school library.

Parental involvement at St. Joseph's has always been high, and that tradition has continued with the expansion of the school's technological capabilities. Volunteer parents assist a great deal with network maintenance, hardware repairs and software installation and maintenance. St. Joseph's parents have played a key role in directing and executing St. Joseph's technology agenda and are thankful for the role the E-rate has played in helping to further that agenda.

St. Joseph's has only recently completed its network, and so has only just begun to implement the integration of technology into the curriculum. But with a quality infrastructure in place, St. Joseph's School has a firm foundation on which to build.

Illinois

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Waukegan Public Schools

Waukegan, Illinois

Discount Level: Year One: 78%; Year Two: 80%
Discounts in Year One: $155,000
Discount in Year Two: $196,000
Contact: Judith Green, Instructional Technology Director, jgreen@mail.wps.lake.k12.il.us

The community of Waukegan is urban, blue-collar and ethnically mixed with a median household income of $39,000. The school district serves approximately 15,000 students between kindergarten and high school.

Federal and state grants paid for the installation of most of the district's telecommunications infrastructure. As these grants run out, however, the E-rate is empowering the district to maintain its technology and learning agenda. Through the E-rate's discounted T-1 lines, the district is using video conferencing and distance learning to expand students' horizons at all of the district's schools. This district-wide equity in technology would not have been possible without the E-rate program. With the savings from E-rate discounts, the district is updating its antiquated computer equipment and wiring its remaining schools.

New education technologies are helping teachers reach at risk students. For example, Nova Net is an incredibly successful Web-based alternative education program, currently used by 150 of the district's most at-risk students. The Nova Net program has already produced graduates and is demonstrably reaching students who were not thriving in the traditional school setting.

Students of the Waukegan schools, in cooperation with Argonne National Laboratories and the Illinois State Department of Education, pioneered a highly popular project which other schools across the state are joining. The students took tutorials on scientific fieldwork provided online by Argonne National Labs, after which they collected and submitted local soil samples. The lab then displayed its detailed analysis of the sample online, with full graphics and text. The Illinois Department of Education arranged the submission of further soil samples, for comparison, and now other schools are having students take the tutorials and submitting samples of their own. Soon, dozens of samples from all over the state will be online, and a number of science teachers are already beginning to incorporate the study of these samples into their classes.

The E-rate has also revolutionized the school library by making Internet access, educational software, and online subscription services affordable. School libraries throughout the district now are multimedia rich resources for the entire community.

E-rate funding has opened the door to productive collaborations with other institutions, including universities and businesses. The Waukegan School District has formed distance learning partnerships with a half dozen institutions of higher education. The district has also developed a number of programs with business partners, all of which rely on high quality online interaction.

The district's facilities are also available to the larger community. The local park service and YMCA use the schools' computer facilities as research resources and training. The district also hosts an ESL Family Night at its schools, and a senior citizens computer literacy group, Senior Net, also uses the district's facilities for research, meetings, and demonstrations.

Waukegan is using most of its E-rate savings on the continuation and expansion of professional development, particularly in computer literacy. The E-rate has made meeting a new Illinois teacher certification requirement for technology proficiency easier for teachers by providing access and the means for training. Also, through a combination of funding sources including the E-rate, the district has been able to increase its technical staff to maintain its network and equipment which, in turn, allows teachers to teach rather than troubleshoot.

Teachers now have email, fostering increased communication between teachers and parents (especially at work, as many parents are not online at home) and among teachers themselves. The school has a general website, which will soon be linked to individual websites already posted by teachers with homework assignments and syllabi online.

"We invite the public to come in and see how the technology tools are being used to improve education." Judith Green, Instructional Technology Director, Waukegan Public Schools.

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Southwest School Corporation
Sullivan, Indiana

Discount Level: 58%
Discounts in Year One: $25,000
Discounts in Year Two: $150,000
Contact: Nancy Hunt, Technology Coordinator,
nhunt@swest.k12.in.us

The Southwest School Corporation is a rural school district serving several small towns in western Indiana. The county seat has a population of just over 4,000. The district has one high school, one middle school and three elementary schools.

The E-rate has sharply expanded Southwest School Corporation's technology capacity. Before the E-rate only 40 percent of the schools in the district were wired; now every school is wired. Moreover, participation in the E-rate has pushed the corporation to begin implementing a technology plan in the schools and to add a technology coordinator to assist with these responsibilities.

The corporation is also working in collaboration with Ivy Tech State College of Indianapolis and Vincennes University. The colleges provide computer instruction, software and equipment to the district. In return, the Southwest Schools' computer labs are used for off-campus classes for students at these colleges. The corporation has the only high-speed connections in the community that can support this level of traffic.

The students of Southwest School Corporation are fully integrating the Internet into their assignments. For example, eighth-grade students studying volcanoes use the Internet for directed research, finding information about volcanoes in general and researching specific volcanoes all over the world. Students then present their findings to the class in an electronic presentation. One mathematics teacher is incorporating interactive-online teaching and other methods to teach middle school students. These students, who call themselves the "Dimensional Dudes," in turn become math tutors for elementary students.

The corporation has worked with parents to become more involved in their children's education. Parents and teachers are communicating regularly with one another via e-mail. Parents will soon be able to access an online "homework hotline" with information on homework and daily lesson plans.

Grayson County Public Library
Leitchfield, Kentucky

Discount Level: 70%
Discounts in Year One: $ 4,700
Discounts in Year Two: $ 3,500
Contact: Karen Gillespie, Library Director,
library2@creative-net.net

The Grayson County Public Library serves a poor, rural area in the southwestern corner of Kentucky. The area is largely agricultural.

The E-rate has enabled the library to install a dedicated frame-relay connection to the Internet for the public and staff. The budget constraints on the library would have made it impossible for the library to afford this connection without the E-rate discount. As a result, Grayson County Public Library now has five public access computers—all of which are busy, every hour of every day. The library is the only source for Internet access in this area, and most community residents cannot afford Internet access at home.

The library is collaborating with the Kentucky Commonwealth Virtual University and Virtual Library to offer residents a four-year degree without commuting to campus. Elizabethtown Community College also brings off-campus classes to Leitchfield, and the library provides materials to support the curriculum, including access to the Internet for class assignments.

Residents are also flocking to the library to take quarterly computer and Internet courses. People who have never been to the library have become frequent users. "Because there are so few avenues in this community for learning computer skills, our patrons have relied heavily on us," said Library Director Karen Gillespie.

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St. Martin Parish School District

Breaux Bridge, Louisiana

Discount Level: 83%
Discounts in Year One: $219,000
Discounts in Year Two: $368,000
Contact: James Mingo, PC Specialist,
james_mingo@stmartin.k12.la.us

St. Martin Parish has a population of about 44,000 people. The area is rural and agricultural, and the primary local industry is sugar cane farming. The unemployment rate is very high in the area, hovering over 10 percent.

The E-rate has enabled the St. Martin Parish School District to build a wide-area network that connects every school and classroom to the Internet. Before the E-rate, less than 10 percent of the district's classrooms were wired. The E-rate has also enabled the district to get a high-speed (4.5 mbps) district communication link, and a T-1 link for every school. "[The E-rate] has been a wonderful opportunity to update our communications facilities, and to improve the learning environment for public school children in our parish," according to James Mingo, the district's PC Specialist.

To capitalize on the new technology, many teachers are taking professional development courses in educational technology and are starting to use technology effectively in the classroom. Most teachers have received professional development training in several software packages and in Internet integration into classroom preparation and activities.

For example, one science teacher uses the Internet to broaden his lesson plans, incorporating the latest information and data from NASA. A computer science teacher, using resources found on the Internet, is teaching web design, graphics design and programming. Even veteran teachers are enthusiastically adapting the technology, using graphics design, multimedia, and video. Mingo agrees with their enthusiasm. "This is a visual generation of kids. Multimedia is the way to hold their attention.... Many kids come to school early and stay late to use the computers and Internet."

Some St. Martin Parish schools are providing after-school computer training for adults, including instruction in basic computer use, word processing and the Internet. The district library is seeing an increase in Internet use by students and adults. All seven branch libraries now have Internet access through the state telecommunications backbone. Finally, the school district is planning a website where parents will be able to find out more about grades, homework assignments and lesson plans, order school supplies, and communicate with teachers via e-mail.

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massachusetts

Cathedral High School
Boston, Massachusetts

Discount Level: 90%
Discounts in Year One: $107,938
Discounts in Year Two: $38,982
Contact: Richard Smyth, Library Media Specialist,
rsmyth@mec.edu

Cathedral High School serves an ethnically diverse inner-city low-income community, where the majority of residents are African American. The teachers and staff of Cathedral High believe that Internet-facilitated instruction is no longer a luxury, but a necessity. Without the E-rate, however, the school and community would not be able to bring the Internet to its underserved population. "Our school is very poor. We serve the poor... so E-rate funds [have] allowed us to provide the access that many wealthy school districts already provide," says Richard Smyth, the school's Library Media Specialist.

The E-rate has enabled Cathedral High School to install network connections throughout the school, purchase a T-1 connection to the Internet, put a computer on the desktop of every teacher and give every teacher an e-mail account. Cathedral High is in mid-transition: it has built the infrastructure, and is now working to get computers into the classrooms for students. The E-rate program has also attracted other grants. "Funders like to give where money has been given... [The E-rate] has played a critical role in implementing our technology plan," said Smyth.

Now that Cathedral High has Internet access, it is participating in Virtual High School (http://vhs.concord.org/home.htm), a grant-funded program through which 20 students may choose from nearly 200 distance learning courses if their school provides an online course of its own. Cathedral High School teacher Jamie Hutchinson, in partnership with teacher David Dalton, is teaching a course titled "Evolutionary Genetics with a Biotechnology Twist!" which examines biotechnology, evolutionary genetics and how our understanding of genetics impacts society.

The teachers at Cathedral High are still learning to use the new technology, but are already integrating it into their daily work. According to Smyth, "The E-rate has quite simply had a profound effect on our operations,." Communication between schools has become easier and more frequent, including important discussions concerning strategy and methodology. Once Cathedral High School acquires more computers, it plans to bring parents into the school and educate them about computers and the Internet.

E-rate funding has enhanced community-based programs at Cathedral as well. These programs include SEAC (the South End Adults at Cathedral program, which serves immigrants through English as a Second Language, computer and Internet literacy instruction), and City School, a summer youth minority leadership program. Both have made use of and benefited from Cathedral's augmented infrastructure.

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Decatur Public School District

Decatur, Michigan

Discount Level: 76%
Discounts in Year Two: $12,300
Contact: Ron Reisterer, Curriculum and Technology Director, ronr@egl.net

In the rural village of Decatur, Michigan where nearly half of the 1,200 students in public schools quality for free and reduced-price lunch, the E-rate has opened up a world of possibilities. Previously largely isolated from the benefits of the information revolution, the E-rate had made it possible for Decatur Public School District to afford broadband T-1 connections—the only such lines in the village.

The Decatur Public Schools are installing five Internet-connected computers in every classroom, which will give students access to distance learning opportunities and teachers access to new teaching methods and materials. In addition, the district is collaborating with the nearby Van Buren School District and area colleges to provide a variety of distance learning opportunities to students. Classes range from advanced literacy in popular software applications such as Microsoft Office, to undergraduate college level courses in chemistry and social sciences. "E-rate is an important catalyst, making quality local projects possible," said Ron Reisterer, the district's Curriculum and Technology Director. Educational software and the networked student-information applications have enabled teachers to record grades electronically and to post class information electronically, which introduces a new ease and flexibility in learning and teaching. The school district has offered numerous technology workshops, many of which have been popular with the staff and community.

The Decatur School District plans to expand inter-school and teacher-parent communication by installing a new voicemail telephone system and by providing school staff with e-mail accounts.

Bullock Creek Schools

Midland, Michigan

Discount Level: 54%
Discounts in Year One: $34,900
Discounts in Year Two: $21,195
Contact: Rose Burleson, Director of Curriculum and Technology, burlesor@mindnet.org

The Bullock Creek Schools serve a socioeconomically diverse population of middle and working class families in southeastern Michigan. Although the district is largely suburban, it includes a significant low-income population. One elementary school in Bullock Creek is eligible for E-rate discounts of over 80 percent.

With E-rate support, the district has brought Internet access to every school. The secondary schools and the largest of three elementary schools now have Internet access in all classrooms, while elementary schools have access in the computer labs. The district is the first institution to have broadband (high-speed) connections to the Internet within its service area, although businesses in neighboring cities do have access.

Bullock Creek Schools' teachers and students are integrating technology into teaching and learning. Teachers prepare lesson plans using online resources and students demonstrate learning with presentations in Hyperstudio and Powerpoint. A social studies teacher created a Hyperstudio presentation on travel and customs throughout Mexico to help students learn—through video clips and still pictures—about culture and geography. Teachers are also using educational software to enhance teaching in core curriculum subjects such as mathematics, science, reading and writing. Plans are under way to create a distance learning classroom which will offer advanced placement courses online and connections to sources throughout the country and the world.

The new technology has energized parents, who have access to the district's website and to teachers via e-mail. Elementary schools are running a software-based program to involve parents in reading with their children.

The entire school community has access to the Internet because of the E-rate. The schools' computer labs and libraries are also open to the community members after hours.

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Sault Area Public Schools

Sault Ste Marie, Michigan

Discount Level: 60-80%
Discounts in Year One: $158,588
Discounts in Year Two: $350,000
Contact: Steve Gordon, Director of Technology,
sgordon@eup.k12.mi.us

The Sault Area Public Schools are located in Sault Ste Marie, Michigan, near the U.S./Canadian border. The district covers a very large geographical area and many of its 3,118 students are Native American. Overall, the income levels of community residents are lower than average.

"The E-rate is the reason our classrooms are wired, " said Steve Gordon, the district Director of Technology. The technology time line for wiring the school district was cut in half with the help of the funds from E-rate, and the district has been able to wire every classroom in the district. This acceleration has allowed teachers and administrators to concentrate on improving learning and student achievement.

Sault Area Public School teachers are beginning to integrate technology into their lesson plans. One teacher assigns a new "question for the weekend" every Friday. Over the weekend, students research the question online from home or the library to find the answer. For students who don't have access at home and can't get to the library, computers are available at school before class. Even at the elementary-school level, the Internet is being used to supplement a broad range of courses. For example, elementary school classes throughout the district are coordinating with classes all over the world to exchange e-mails—sharing cultures and language.

Through the district's professional development programs, teachers are learning how to use computers and to use the Internet to find and develop lesson plans and other learning tools. The district is also planning to pursue distance learning programs through videoconferencing in order to bring additional classes to students.

"We are doing a lot more with technology in the past few years and it shows in our community," says Gordon. Parents are starting to e-mail teachers to learn about homework and classroom lessons, and the improved connectivity has changed the relationship between parents and teachers from sporadic parent/teacher meetings to daily interaction. This frequent contact has kept parents more involved in both their children's learning and in the larger school community.

missouri

Bakersfield R-4 School District

Bakersfield, Missouri

Discount Level: 80%
Discounts in Year One: $25,169
Discounts in Year Two: $5,965
Contact: Vicki Claybrook, Technology Coordinator,
dvclay@hotmail.com

Bakersfield School District serves much of Ozark County, located in the southwestern part of Missouri. Farming is the primary industry in this low-income homogenous region, with a large percentage of students receiving free and reduced-price lunch.

The E-rate program helps pay for the school's T-1 Internet connection through MOREnet, a state-organized cooperative that offers bulk-discounted telecommunications and Internet services to schools and libraries. Their broadband Internet connection is the only of its kind in the Bakersfield area. The school-wide network runs on a fiber-optic backbone, with six buildings wired and 120 Internet-capable computers. The server, network software and wiring were all discounted through the E-rate program. Even meeting the maintenance costs alone, without the assistance of the E-rate, would be impossible for this poor farming community. "Each year we hope to see the funding remain so we can keep progressing and expanding out technology for our students, staff, parents and community," says Technology Coordinator Vicki Clay.

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This is the first year the school network became operational. Teachers are being trained in the integration of technology into teaching, and they are steadily increasing their use in daily instruction. With continued E-rate support, Bakersfield will open a virtual high school next year, offering distance-learning classes in advanced mathematics and science, in cooperation with a local community college. The Bakersfield School Library is the sole library in the district. With the new T-1 connection and 10 new computers, the public now also has access to the Internet's vast resources.

The communications, social sciences and arts programs in Bakersfield's schools have been the first to benefit from the E-rate. English, journalism and history students regularly search the Internet for poems and prose, newspapers and political stories and primary sources. Arts students have presented reports on painters and sculptures, and the whole school has enjoyed access to virtual tours of museums and monuments. The school's business teacher uses the Internet to enhance the Annual Stock Market Contest, run by the school's Business Club. Quick access to current stock quotes, news and economic data has transformed the competition, allowing students to make informed, timely decisions.

Bakersfield's E-rate-supported connectivity allowed the district to participate in a grant, which gives it use of Microsoft's FrontPage website design software. Next year, Bakersfield will post a district website and possibly individual websites for specific classes. Parents and the community will have access to information about school events and programs, including the school's proposed evening classes, which include basic computer and Internet literacy, common software applications and desktop publishing.

Scott City R-1 Schools
Scott City, Missouri

Discount Level: 60%
Discounts in Year Two: $14,623
Contact: Martha Nothdurft, Technology Coordinator / Business Teacher, Martha@scshools.k12.mo.us

The Scott City R-1 Schools are located in a small rural community in southeast Missouri, and serve 1,020 students between kindergarten and twelfth grade. The E-rate has ensured that every classroom has Internet and network access.

Scott City R-1 has formed several partnerships because of the E-rate, including an agreement that allows parochial middle school students regularly scheduled access to the district's computer labs. Additionally, the district has joined with the local library system to give students access to the extensive online resources of the public library. Scott City R-1 Schools has also received help from Ralston/Purina in training teachers to make the best use of the new technology.

Using E-rate-supported infrastructure, the district is integrating technology into a wide variety of courses, and teachers and students are reaping the benefits. Students have access to the Internet in every classroom, and are using online tools, such as search engines, for directed research, and several software packages to facilitate their learning experience. Teachers now use e-mail to communicate more frequently with parents. They are also starting to integrate the Internet into the curriculum as a tool to encourage students to explore the world beyond Scott City.

The schools are also offering computer courses for adults in the evening. Courses in basic applications and Internet use have been popular among students and teachers. Parents are pushing for greater technology literacy in the schools, and are using technology to become more involved in their children's education. The district holds several open houses each year for parents to communicate with teachers, and technology is one of the most important discussion topics. "One of the district's goals is for all students to graduate computer literate," says Martha Northdurft, the district technology coordinator and a classroom business teacher. "It is vital students get the tools necessary to be part of the future workforce."

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Holly Springs School District

Holly Springs, Mississippi

Discount Level: 90%
Discount in Year Two: $45,000
Contact: Gail Atkins, District Technology Coordinator,
gailwk@hotmail.com

The Holly Springs Schools serve a rural community that is 80 percent African-American and 20 percent Caucasian. 90 percent qualify for free and reduced price lunch. The school district's tax base is so small that without E-rate discounts it would have been unable to pursue an effective educational technology agenda. Now, the district has at least one computer in every classroom connected to the Internet, and plans to install a fiber optic backbone connecting their 4 buildings, as well as putting a large presentation screen in each classroom for class instruction. In addition, they have reinvested their savings from the E-rate program into their technology budget, buying the computers, necessary routers, hubs and other equipment to bring the Internet to the classroom.

Both teachers and students are excited by the new opportunities afforded by the connections. A third grade class went on a virtual tour of Italy, viewing the Leaning Tower of Pisa, the Sistine Chapel and museums of Florence, after which they made a models they presented to their school. The class also receives emails from other classes across the United States, and students have developed friendships with other students from around the country.

The school now offers distance learning classes to its teachers, including professional development classes in the use of technology provided by the University of Mississippi. E-rate supported connectivity has also made Holly Springs eligible to participate in the state's Literacy Challenge Grant program. A monthly electronic newsletter, with articles and updates from teachers, has increased communication between parents and teachers. The district is planning on setting up email accounts for all staff to further communication with parents, who have become very engaged in the technology upgrades made possible by the E-rate. Many parents have come out for Netdays, where they have literally wired the school buildings themselves.

Holly Springs School District is part of several cooperative community efforts made possible by the E-rate. The Holly School District Parent Center, which is shared by the Holly School District, the Department of Human Services, Holy Family Catholic Schools and the local Headstart program, is offering a number of classes to the community, including computer training and a course on Internet safety for children. The local public library shares the schools' high-speed Internet connection and offers five computers for community use. The schools and libraries offer the only broadband connections available for public use in the community.

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Colstrip Public Schools
Colstrip, Montana

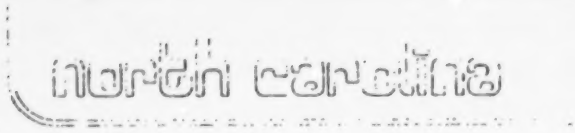
Discount Level: 68%
Discounts in Year Two: $44,278
Contact: Judy Anderson, Director of Technology,
janderson@colstrip.k12.mt.us

The Colstrip Public School District serves a rural area in southeastern Montana. The school's students are approximately 30 percent Native American.

The E-rate provided motivation for the district to write a technology plan for the first time in years. Although the money received from E-rate itself covers only a small part of the costs of bringing technology to the schools, it nevertheless spurred the community to "focus on it and do it." Using the E-rate discounts and savings, the district networked all classrooms, computer labs and libraries, and connected them to the Internet with a T-1 line—the first broadband connection in their community. "This has been a very beneficial program for our district," according to Judy Anderson, the district Director of Technology.

The Colstrip Public School District has overcome its geographical isolation by joining a consortium of local school districts pooling their resources to provide distance learning, including foreign languages and calculus. "The E-rate has provided a tremendous boost for small rural communities to be connected not only to the Internet but also to each other," said Anderson.

After hours, the schools are offering classes to teachers and community members to learn how to more effectively use computers and the Internet. The district has created a website to enable parents, students and teachers to communicate via e-mail and to post relevant information, including class and extracurricular activity schedules. There is also an internal website for students and staff members to receive technical assistance on applications and to access other district information.



Alamance-Burlington School System
Burlington, North Carolina

Discount Level: 56%
Discounts in Year Two: $328,729.64
Contact: Neil Hayes, Technology Director,
neil_hayes@abss.k12.nc.us

Alamance-Burlington School System is in the north-central part of North Carolina. The area is mostly rural, although it does serve the city of Burlington, which has a population of 42,000.

With E-rate discounts, the school system has upgraded its secondary schools' telecommunications lines to high-speed T-1 connections. Prior to the E-rate, schools had only one dial-up connection per school, but now every class can be online at the same time. Because of the E-rate program, the school district has been more willing to put more dollars into technology. "It was seen almost as a 'matching' opportunity that would have been foolish to pass us by," says Neil Hayes, the Technology Director for the district. Teachers are encouraging students to use the Internet to gather research information and use computers to do presentations. "This has expanded our students' and teachers' view of the world, and interactions with each other, and with educators and students," says Hayes.

Students are using the Internet for a wide range of activities, from researching dinosaurs, rainforests, and childrens' authors to following the Iditerod race in Alaska. When Canada Geese landed at the school last fall, students rushed to the Internet to learn more about the flock, using resources that would otherwise be unavailable. Students are also creating their own electronic presentations, including one class where students are creating a database of and presentations about North Carolina lighthouses.

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Parents and community members are also taking advantage of the new technology. The school system's technology centers draw large crowds during open-house events. Some schools in the district have opened up their computer labs to the community and are offering parents training courses in computer use and the Internet.

The Alamance-Burlington School System is also collaborating with Elon College to offer teacher training courses. The district, which now requires teachers to have a least 3 credit units in technology (out of 15) to renew their teacher licenses, is offering classes to teachers after-school hours, on weekends and during the summer months.

School system officials credit the E-rate with bridging the digital divide. "We have to have some mechanism to make broadband telecommunications available to the public schools, or we will be turning the digital divide into a Grand Canyon," Hayes said. Without the E-rate, "[w]e would be forced to choose between technology and textbooks."

new hampshire

Barrington Public Library

Barrington, New Hampshire

Discount Level: 40%
Discounts in Year One: $480
Discounts in Year Two: $480
Contact: Amy Richards, Library Director, bpl@nh.ultranet.com

The Barrington Public Library is located in the southeastern portion of New Hampshire, near the Massachusetts and Maine borders. The town is predominantly rural and middle-class, but the area is growing, and the number of school children has recently increased significantly.

Thanks to the E-rate, the library is providing more and faster Internet access to the community. The E-rate funds have also leveraged other funds to purchase computers with greater memory capacity; peripherals such as scanners and fax machines; and update software.

With the new high-speed access, the library has become a community gathering place where people come to e-mail friends and family, conduct business transactions over the Net, study and do research for classes. Many people who do not have Internet access at home come to the library to use the Internet, and even people with computers at home participate in library courses on the use of computers and how to access the Internet. Courses are usually filled to capacity. A large population of older people is learning about the Internet at the library. One senior citizen used the library's Internet connection to locate World War II buddies who he had not spoken to in years. Although he didn't know how to use a computer prior to coming to the library, he sat down with a librarian and learned enough to find the information he needed to contact his fellow vets!

The community is excited by the services now provided and the patron base is expanding to include even those who would not have come to the library before computers were available.

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Deming Public Schools

Deming, New Mexico

Discount Level: 86%
Discounts in Year One: $700,000
Discounts in Year Two: $750,000
Contact: Ted Burr, Finance Director, ted.burr@dps.k12.nm.us

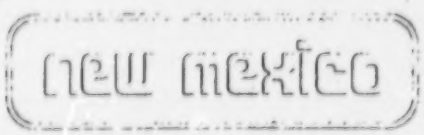
The Deming Public School system is located in southern New Mexico. The local population is poor, and many students are children of migrant workers. In one school, every single student qualifies for free and reduced-price lunch. School facilities in Deming are largely outdated, with one facility built in 1918.

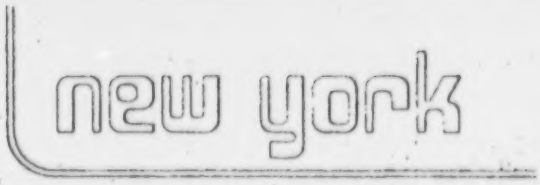
With E-rate discounts, Deming Public Schools have networked personal computers in classrooms and computer labs throughout the district, and brought broadband Internet access—the only such Internet connection in the community available to students and the public—to all district schools. Savings from the discounts were reinvested to upgrade computers in labs and classrooms. "Without the E-rate we would have the Internet in only the school libraries," says Ted Burr, the district Finance Director. "It has cut years off of the district technology implementation time line."

The local community has also gotten behind the district's efforts. In conjunction with the E-rate, the community voted for a bond for school funding with almost $700,000 reserved for technology improvements. The E-rate has also leveraged further grants from other sources.

Teachers in Deming are learning how to integrate technology into the curriculum through collaborations with a local consortium of area school districts and an initiative with Western New Mexico State University. The consortium will offer technology classes for teachers and the community. The consortium of five area school districts will present 16 classes this year for professional development. Moreover, the local teaching college also offers technology training for teachers. Teachers are now required to do at least one classroom presentation to their students using the personal computer and are starting to use software to enhance core education subjects. Students are primarily using technology to do research and to explore the world outside of their isolated community.

The district is planning to offer distance learning courses in physics and foreign languages. The district is also planning to offer software-based courses over the Internet for children with special education needs.





Buffalo & Erie County Public Library

Buffalo, New York

Discount Level: 60%
Discounts in Year One: $352,142
Discounts in Year Two: $333,949
Contact: Kenneth Stone, Deputy Director / CFO,
stonek@buffalolib.org

The Buffalo & Erie County Public Library system has 52 branch libraries spread out over Erie County's 1,045-square miles, which includes the city of Buffalo. The county includes urban, suburban and rural areas.

The E-rate program has helped the library system extend high-speed graphical Internet access to all 52 libraries. Prior to December 1998, the slow computers and connections in the library could only support text-access to the Internet. The E-rate has helped leverage local and grant funds so that now the library has high-performance workstations, fast Internet connections, plus materials and incentives for training both staff and public in using the new technology.

The E-rate program is directly expanding the bandwidth available to outlying libraries, increasing the bandwidth between the library system and the Internet, providing discounts for data cabling and networking equipment, lowering ongoing telecommunications costs, and providing discounts ranging from 40 percent to 85 percent on the cost of 40 servers installed in libraries throughout Erie County. The library's new expanded website, www.buffalolib.org, gives visitors 24 hour access to the library's catalog, electronic information databases, and an electronic "reference desk." The "reference desk" provides links by subject to websites pre-screened by librarians to provide quick, accurate information to answer questions typically asked by library patrons. Many in the community are using this new tool to find information online.

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The library has been very successful at using the E-rate to leverage other funds. Over the past few years, the library has raised over $5.3 million in funding from state, local, and private sources, in addition to its $700,000 in E-rate support.

The community is excited by the revolution in the libraries. The number of patrons using electronic library services has grown exponentially, and many are using the library more often. The libraries are offering a series of free classes on how to use computers, software and the Internet. The training lab features 22 networked personal computers for hands-on learning in a comfortable and attractive classroom setting. According to Deputy Director Kenneth Stone, "[I]n one year, we have made major progress towards bridging the digital divide!"

Wallowa School District 12

Wallowa, Oregon

Discount Level: 70%
Discounts in Year One: $6,000
Discounts in Year Two: $8,000
Contact: Edward Jensen, Superintendent,
ejensen@mail.wallowa.k12.or.us

The Wallowa School District 12 is a largely rural district, of 875 square miles, nestled in the mountains of eastern Oregon. The main industries in the area are ranching and timber.

E-rate discounts have been used to upgrade to a T-1 line—the only high speed connection in the area—and to give students access to the school district network from home, giving countless area families the opportunity to access the Internet for the first time.

The district is collaborating with other entities to provide new opportunities for students. For example, Wallowa School District 12 currently runs a two-way interactive video program that provides courses not offered by the district. The video teleconferencing program also allows the district to join with others and share teachers for hard-to-find teaching subjects such as foreign languages and science.

Student teachers from Eastern Oregon University in La Grande, Oregon, are also teaching courses through the video-conferencing system and hopes to offer college courses via two-way interactive video with Eastern Oregon Universities, which would allow seniors to earn college credit while working towards their high school diplomas. In the near future, the district intends to offer a series of vocational courses, such as nursing and law enforcement. "We are working on getting all schools in Wallowa County to share staff through video-conferencing," says Edward Jensen, the district's superintendent.

Just a few years ago, there were virtually no Internet users in the community. Now Wallowa offers classes to adults and children on how to use a computer and the Internet. The district's after-hours computer sessions are always filled; partly as a result of these classes, parents are becoming more involved in school activities and are able to communicate with teachers by e-mail and access homework information.

Finally, Oregon's State Department of Employment has placed a terminal in the school, so students and community members can use the state's job search resources.

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rhode island

Rhode Island Department of Education
Providence, Rhode Island

Discount Level: 55% (state average)
Discounts in Year One: $6,000,000
Discounts in Year Two: $7,000,000
Contact: William Fiske, State Coordinator of Educational Technology, fiske@ride.ri.net

Rhode Island is a small but diverse state, with a range of ethnic groups and income levels. Although the state is predominantly urban, there are a few significant rural areas. E-rate discounts have helped Rhode Island span the extreme gap in quality and access to technology that separated wealthy suburban school districts from their poor urban neighbors. Inner-city urban schools are excited over the professional and educational opportunities the E-rate has brought to their struggling schools.

Rhode Island schools have saved on Internet access, telephone charges and transport lines and used those funds to wire classrooms, buy computers and equipment, upgrade electrical supplies and purchase software. With the help of the E-rate, the state government provided high-speed Internet access to every school via T-1 or fractional T-1 lines. Just two and a half years ago, before E-rate began, 32 of 45 schools in the poorer urban districts were each using a handful of inadequate dial-up lines. Now every school has direct, high-speed connections. "The E-rate is the medicine that has helped our struggling schools get healthy," according to William Fiske, the state education technology coordinator, "by expanding the student's learning beyond the classroom and campus. Urban schools that cannot afford to keep current with textbooks and library materials now use the Internet and their connections to other information networks to do more than compensate that lack."

The E-rate has also benefited Rhode Island's rural areas. The rural Foster County School District saved enough on its wiring and Internet costs for the superintendent to purchase low-cost and refurbished computers for every student who did not already have a home computer. Parents and students in this rural area now access online school and academic information, as well as e-mail teachers, other students and parents.

The E-rate program helped encourage additional funding for technology by inspiring confidence in Rhode Island's technology agenda. The Rhode Island legislature, understanding the importance of connecting the state's schools to the Internet and integrating educational technology into the classroom, awarded $3.5 million so that schools could match all E-rate discounts during Year One of the program. Additionally, E-rate supported connectivity enabled the state to accept teacher training grant from the Rhode Island Foundation. The grant provided $5.7 million over three years for teacher professional development in integrating technology into their curriculum. By providing statewide equity in quality technology, the E-rate also allowed Rhode Island to take full advantage of the federal Technology Literacy Challenge Fund, ensuring that schools had matching funds for the purchase of computers, software and extended professional development.

Rhode Island expects to be notified shortly whether it will be given two awards from the Gates Foundation, awards it is eligible to receive only because of the services supported by the E-rate program.

Rhode Island schools have also entered a partnership with Brown University and the University of Rhode Island, creating their own Internet Service Provider co-op, called RINET, to lower access costs for Internet service. Statewide groups of K-12 educators, like foreign language teachers and science teachers, now create, develop and discuss curriculum, professional development programs and instruction methodologies online. These groups are aggressively pursuing an online presence and have been rejuvenated by the connectivity the E-rate provided.

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Tennessee

Tennessee Department of Education
Nashville, Tennessee

Discount Level: 69%
Discounts in Year One: $50,000,000
Discounts in Year Two: $55,000,000
Contact: Jackie Shrago, Technology Liaison, shragoj@k12tn.net

Tennessee has a strong tradition of cooperation between state and local education officials to form technology partnerships and share resources. When the E-rate was enacted, the Tennessee Department of Education saw a unique opportunity to expand the statewide partnership around online learning. Tennessee applied for the program as a state, and has successfully received funding in the first two funding years and has been approved for Year Three funding.

Before the E-rate, students spent an average of five minutes per week doing school-work on the Internet. Now, students spend an average of from four to five hours per week, allowing teachers to fully use the Internet as an educational tool and to develop lesson plans around Internet projects. With the E-rate, the bandwidth available to schools has increased 500 percent. Now 90 percent of all Tennessee classrooms have high-speed access to the Internet. In many communities, this Internet access is the first connection in the area at faster than modem dial-up speeds.

"The E-rate funding allowed us to obtain the necessary technical infrastructure and focus on developing teachers' skills in integrating the Internet into the curriculum," according to state Technology Liaison Jackie Shrago. "Without that ongoing assurance, it would be a waste of time to develop teachers if the technology is not consistently available and within the existing budget." The vast resources of the Internet keep students more involved and engaged in learning. Teachers are also excited about the Internet as a result of the E-rate. Because of expanded connectivity, teachers are able to show a whole new world to students—particularly those in rural and inner-city areas, and teachers are using the new resources to reach out to underperforming students. Tennessee's rural schools see the Internet as not only a primary source for students to conduct library research, but as the basis of thousands of hours of instruction for lessons and projects that meet student learning goals. Teachers in Tennessee have been using e-mail extensively for eight to 10 years, but now they are able to use e-mail along with low-speed videoconferences for students to interact with other experts. Furthermore, teachers are more connected to parents and the local community, building important relationships to help their students perform.

At the state level, all savings from E-rate discounts have been channeled back into network expansion, allowing other technology funds to be used exclusively for an extensive professional development program for teachers aimed at systemically incorporating the Internet into every class and subject. Approximately 16,000 teachers—a third of the state's teachers—have participated in this program to date. The Internet is becoming a regular and reliable part of most Tennessee classrooms.

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Reicher Catholic High School

Waco, Texas

Discount Level: 40%
Discounts in Year One: $3,000
Discounts in Year Two: $12,000
Contact: Matthew Wright, Development Director,
wright@esc12.net

Reicher Catholic High School is located in a poor, urban, ethnically diverse community in central Texas. Thirty percent of Reicher's students are poor. The E-rate program has been a major catalyst in helping Reicher bring horizon-broadening educational technology to this underserved community. With the aid of E-rate discounts, the school jumped from having just 14 outdated computers and 14 typewriters to having a wireless campus of Pentium II-speed computers, faculty laptops, a new computer lab, a T-1 connection and a link to a wide area network with two other schools.

With the introduction of quality Internet lines, the school library has seen a remarkable increase in on-campus research, including support for professional development and college-level course research. The school is applying to the Texas Library Connection, which will give it access to a plethora of additional resources. Teachers, especially in history, mathematics and science have said that the wide array of resources has encouraged the development of students' critical thinking and evaluation skills.

Because of the savings generated by the E-rate discounts, Reicher has been able to allocate more funds to purchasing equipment and software to help speed the integration of technology into the curriculum. Through their E-rate-supported Internet connection, Reicher is providing services such as video-conferencing, virtual tours and distance learning to expand their educational activities, resources and opportunities. Students have been on virtual tours of NASA and are looking forward to the Smithsonian Institute's electronic classroom, scheduled for fall 2000.

The E-rate is a key in Reicher's goal to become a center of learning in an economically depressed area. There is no local library in their area of Waco, and E-rate funds help the school library provide services and access to the community. Teachers are taking online courses on technology integration in the classroom. School staff is warming to the ease of e-mail communication and a general school web site, along with bulletins where teachers will post information about specific classes, is planned for next year.

Elgin Independent School District

Elgin, Texas

Discount Level: 69%
Discounts in Year One: $336,000
Discounts in Year Two: $160,000
Contact: Barbara Allbright, Technology Coordinator,
ballbright@elginisd.net

The Elgin Independent School District serves a poor, urban community where approximately 20 percent of the population are first-or second-generation immigrants. Th ough the E-rate program, the district has been able to pursue a te:hnology agenda that would have been otherwise out of reach. Elgir has networked all 310 classrooms in the district and connected them to the Internet via high-speed T-1 lines. Now the schools and teache:s have access to "a huge array of resources and curriculum thanks to the connectivity," according to Technology Coordinator Barbara Allbright.

Elgin is developing distance-learning partnerships with local universities and community colleges. School administrators have taken online masters-level finance courses and teachers will soon be able to take online professional development classes from Southwest Texas University. Students may take a four-semester track of networking classes at the Cisco (virtual) Academy, after which they are prepared to take the rigorous test to become a Certified Cisco Network Associate. Teachers are also designing virtual classrooms, where students complete assignments online.

Communication among school staff and with parents and students has also increased since the acquisition of e-mail and voicemail. For example, teachers have begun using an electronic grade-reporting system, and parents can access information from the school's website, which is updated daily.

E-rate funds have made Elgin eligible for other funding as well. In the past two years, the district has received about $500,000 in other technology grants leveraged by E-rate discounts. Furthermore, the school-based Community Learning Center now offers online GED programs, very popular English as a Second Language programs and computer-based training tutorials to community members. With computer-based training, individuals can access a wide array of downloadable tutorials, ranging from basic word processing to computer networking.

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Virginia

St. Mary's School
Richmond, Virginia

Discount Level: 40%
Discounts in Year One: $5,988.73
Discount in Year Two: $5,032.80
Contact: Chris Kelly, Technology Committee Chairman,
stmarytech@fhsc.com

St. Mary's School is a parochial school with a mostly Catholic student body, 7 percent of which are from a racial or ethnic minority background. It is located in Henrico County, Virginia, an urban area with one of the highest per capita incomes in the nation.

E-rate discounts help defray the ongoing cost of the school's phone and Internet services. Parents play a key role at St. Mary's in setting technology policy and raising funds for hardware. With E-rate discounts, the school has redirected funds ordinarily spent on Internet services towards purchasing technology equipment. Their goal is to have four to five networked computers in each classroom. Parents also have had considerable input into how technology is integrated into the curriculum. In addition to increasing student's researching abilities, the integration of technology into the classroom has promoted higher learning and critical thinking, student self-responsibility, and increased teacher/student/parent communication.

The E-rate has also supported technology training for St. Mary's teachers. Before the E-rate, the teachers were often far less technology-literate than the students. Now, St. Mary's is offering professional development classes in technology for their teachers.

Lastly, work has begun to automate the school's library in order to better manage the collection, a goal set by the Diocese. St. Mary's is also looking to create a distance-learning program for its community, particularly to offer students classes currently unavailable at the school.

Louisa County Schools
Louisa County, Virginia

Discount Level: 68%
Discounts in Year One: $186,000
Discount in Year Two: $224,000
Contact: Bruno Sestito, Director of Technology,
bsestito@pen.k12.va.us
Donna Love, Technology Specialist, dfoxlove@yahoo.com

Louisa County Schools serve an underserved rural community where 35 percent of the population qualifies for reduced lunch. The E-rate has helped the schools provide its students and community with high-speed (T-1) connections through their elementary schools and very high-speed (T3) connections through its middle/high school complex and the county library. Louisa County Schools have upgraded its network backbone and used the money saved through E-rate discounts to purchase additional computers for the classrooms.

With E-rate funded Internet connections, teachers have been begun using the Web Quest program, which helps create structured inquiry activities on the Internet. Teachers assign a research question, which students must research using online and offline resources. In the fall of 2000, the district will be offering a wide range of distance learning classes with the Piedmont Community College, including classes in web page design and individual applications, such as word processing or database management. Teachers are also getting their technology certifications and are integrating technology into the curriculum. The inter-school communication and cooperation fostered by the E-rate has led the Louisa County Schools to work with other local districts to create a Governor's School for gifted and talented students in the area. The school expects parental involvement in daily school operations and student learning to increase once they complete improvements in the phone service.

With the school's computers accessible to students and the community after hours and the bank of 20 new computers with high-speed connections available in the public library, the residents of Louisa County have made extraordinary strides in bridging the digital divide.

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Norfolk Collegiate School

Norfolk, VA

Discount Level: 40%
Discounts in Year One: $900
Discount in Year Two: $4,954
Contact: Rozalyn Klein, Technology Coordinator, rklein@ncs.pvt.k12.va.us

Norfolk Collegiate School is an independent college preparatory school in Norfolk, Virginia, serving a student body of 800. Savings from the E-rate discounts enabled Norfolk Collegiate School to increase its bandwidth and provide faster and better Internet access for its students.

By making it feasible for the school to get quality online connections via a T-1 line, the E-rate made it possible for Norfolk Collegiate School to participate in Magic2000, a very successful online visual and performing arts program. Through this program, students upload digital images of their interpretative art work to a regional website. Then, each spring, students from across the region come to a free musical concert where the student artwork serves as a changing backdrop.

The E-rate enhanced student learning by providing access to a wider variety of resources, including primary sources. Government teachers have their students access political party websites and those of state and federal candidates and officials. Foreign language and geography teachers take students on virtual tours and use the Internet to study various countries to enhance the student's understanding of the culture. The library is able to provide students online access to periodical subscription services and online databases. Norfolk Collegiate School encourages students to take advantage of independent learning opportunities, including distance learning via the Internet.

The use of e-mail and voicemail between school staff and parents has "revolutionized" communications. Norfolk Collegiate School now enjoys increased communication within its walls, with parents, and with schools in other regions and states. The E-rate also fostered professional development for teachers, especially during the summer months when school labs are used for classes using the Internet.

wisconsin

East Troy Public Library

East Troy, Wisconsin

Discount Level: 50%
Discounts in Year One: $7,000
Discount in Year Two: $10,500
Contact: Jackie Gotz, Director, gotz@easttroy.k12.wi.us

The community of East Troy, Wisconsin, boasts about 3,300 people with an extended service area of 7,300, with over half of the population living in rural areas. In spite of the fact that East Troy is only 30 miles for Milwaukee, there is no local Internet provider; the closest alternative is in an extended calling area. The East Troy Lion's Public Library and the East Troy School District in partnership, purchased the initial equipment and wiring through a state sponsored competitive grant called the Wisconsin Advanced Telecommunication Foundation (WATF) grant. However, E-rate support is necessary for the library and the local school district to continue sharing the benefits of a high speed connection. The school district pays the communication charges and treats the library's computers as if it were a lab in their building. They could not do this without a subsidized rate. The initial partnership has lasted through two WATF grants and has extended Internet access to a private school in this community and provided dial in access to both the school district and the public library catalogs.

Thanks to these high quality connections, the consortium has expanded to include the Burlington Public Library and Burlington School District. In 1998-1999, these institutions received a competitive TEACH training grant, through which teachers and librarians in these two communities have received computer training. The library is now offering computer and Internet training classes to the community. Over sixty people signed up for the first basic computer class, although the library has only four workstations. The classes are particularly popular among East Troy's senior citizens; in one case, an elderly woman in her nineties uses the library everyday to email her family.

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Chippewa Falls Area Unified School District

Chippewa Falls, Wisconsin

Discount Level: 47%
Discounts in Year One: $ 60,000 (approx.)
Discounts in Year Two: $ 60,000 (approx.)
Contact: Jim Hadlock, Education Technology Director, hadlocjk@chipfalls.k12.wi.us

The Chippewa Falls Area Unified School District serves the city of Chippewa Falls in rural western Wisconsin. In the community of 14,000, 4,500 students attend school in the district.

The district used the E-rate funds to expand Internet and telephone service to every classroom and to link to the Internet through high-speed connections. Students now use up-to-date information in databases around the world in real time.

Internet connectivity in the classroom has provided students with the ability to participate in online activities such as "Journey North," a collaborative nationwide project for elementary schools. The district is collaborating on "Journey North" with World University in St. Paul, Minnesota. Students may also take advanced placement courses online as the result of the district's cooperative effort with the Wisconsin State Department of Education. "Technology has allowed us to break down geography," says Jim Hadlock, Chippewa's Education Technology Director.

Because of the E-rate, Chippewa Falls teachers now have access to thousands of lesson plans to integrate into their teaching, and some teachers are bringing experts from around the world "into" the classroom. One teacher even won the grand prize in a contest sponsored by the Computer Learning Foundation for an innovative, educationally sound lesson plan incorporating the Internet that she designed for her classes. The district also is partnering with a technology college to offer professional development courses for teachers.

Some schools in the district are now opening up their computer labs after hours for community use. Since the district has introduced e-mail, teachers and administrative staff are now staying more closely in touch with students and parents, and parents are engaged in their childrens' education. Parents routinely e-mail teachers to find out about lesson plans and homework assignments. "Moreover, [the district is] moving toward being able to share, in a secure environment, the contents of a teacher's daily, electronic grade book with the pupil's parents via the Internet," says Hadlock.

west virginia

The Linsly School

Wheeling, West Virginia

Discount Rate: 40%
Discounts in Year One: $11,533
Discounts in Year Two: $26,231
Contact: Terry Depew, Assistant Headmaster, tdepew@linsly.org

The Linsly School is a day/boarding school situated in a small urban area of West Virginia. The local population of about 30,000 is largely homogeneous and mainly blue collar. The school feels its responsibility reaches beyond providing a solid education to its students. Linsly strives to ensure that all its students are prepared to excel, whether in college or the workforce. The school staff believe that technology literacy is an essential part of this preparation. The E-rate has played a key role in helping them reach these goals.

Although Linsly's T-1 lines pre-date the E-rate program, participation in E-rate has been vital to the maintenance of that connection and Linsly has shifted much of the savings into other crucial technology areas. Also, in Year Two, Linsly received significant discounts on internal connections, enabling it to complete its wiring plan.

All teachers and students of the Linsly School now have e-mail accounts as well as Internet access. Teachers have used the Internet to bring the expertise of professionals into their classrooms and to offer new courses, such as a class in website design in which students are responsible for the creation, maintenance, and improvement of a website for local non-profit organizations. Teachers also have been able to use new software to expand the students' learning opportunities in areas like foreign language and science. Teachers share a common network directory with their classes and post information about their classes online and in listservs, where it is available to students and parents. The e-mail accounts have reduced barriers to communication between parents and teachers and have allowed more direct feedback between students, parents, and teachers. Linsly also holds classes for parents on general computer literacy, Internet literacy and popular software applications.

The E-rate has not only added strength and stability to the Linsly School's technology program, but it has helped to generate new ties with its parent, alumni, and the neighborhood.

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The Education and Libraries Networks Coalition (EdLiNC) was formed to ensure that our nation's school children and communities have affordable access to the information resources of the 21st Century through their schools and libraries. The coalition includes national organizations representing public schools, private schools, libraries and rural community groups. EdLiNC is dedicated to expanding the availability of educational technologies and has worked to secure enactment and full implementation of the E-Rate telecommunications discounts for schools and libraries.

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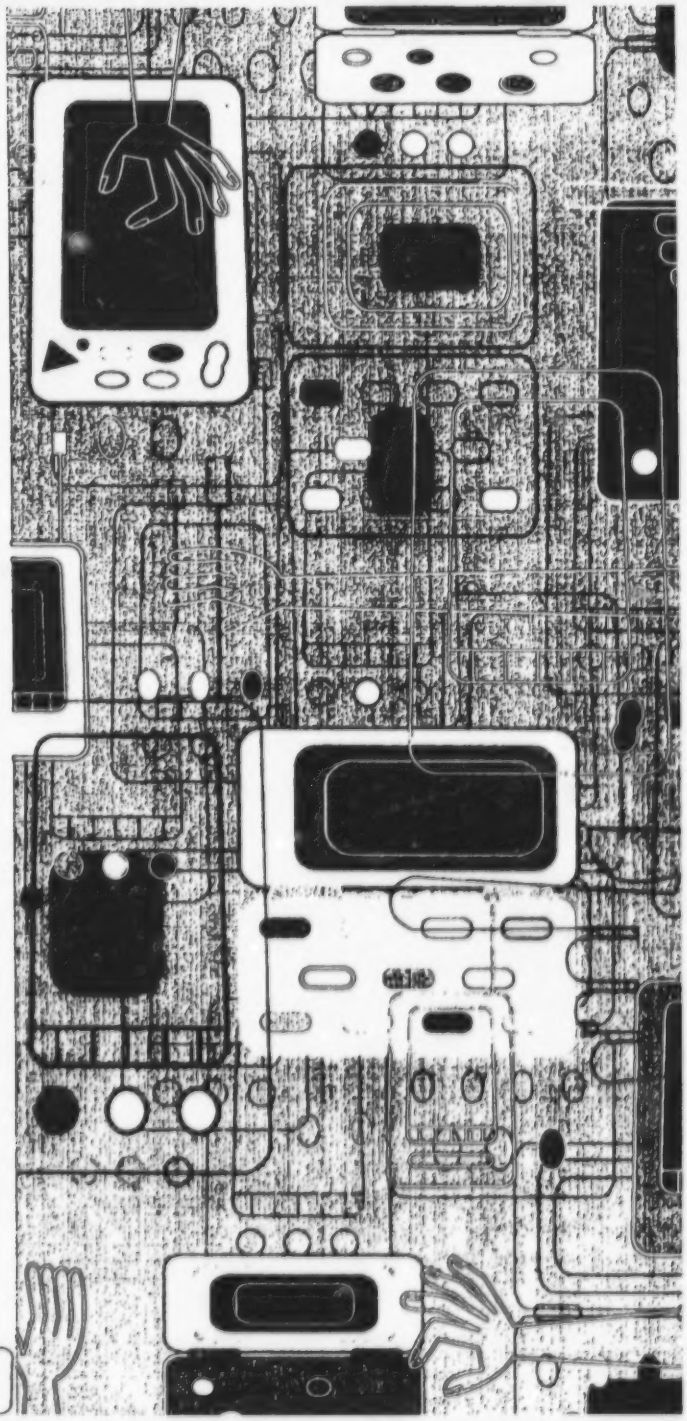

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